THE MINING CONGRESS JOURNAL

VOL. I

SAFETY—EFFICIENCY—CONSERVATION

No. 9

SPECIAL
CONVENTION EDITION
WITH
PROGRAM
OF THE
EIGHTEENTH ANNUAL
SESSION
OF THE
AMERICAN MINING
CONGRESS
TO BE HELD AT
EXPOSITION MEMORIAL HALL
SAN FRANCISCO, CAL.
SEPTEMBER 20, 21, 22, 1915

CONVENTION HEADQUARTERS
PALACE HOTEL

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SEPTEMBER, 1915

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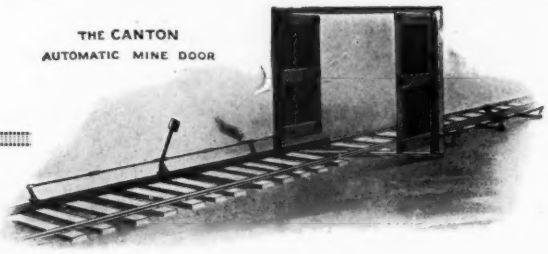

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THE MINING CONGRESS JOURNAL

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Do you know that you are the owners and publishers of the MINING CONGRESS JOURNAL? We trust you will realize the responsibility of this ownership and that you will lend your active assistance in making the Journal a greater success.

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.....191.....

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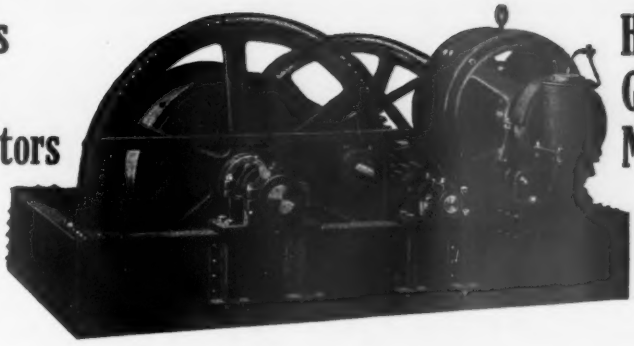

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PROVISIONAL PROGRAM

SUBJECT TO REVISION

Eighteenth Annual Session

OF

The American Mining Congress

SAN FRANCISCO, CALIFORNIA

September 20–22, 1915

OFFICIAL HEADQUARTERS AT THE PALACE HOTEL

Where registration desk will be open until Monday noon—thereafter at the Exposition Memorial Hall.

MONDAY, SEPTEMBER 20

MORNING SESSION

10.00 A. M.

Opening session, Exposition Memorial Auditorium.
Invocation.
Synopsis of President's annual address, CARL SCHOLZ, Chicago, Ill.
Two-minute responses from representatives of such States as desire opportunity to express a word of greeting to fellow members of the Convention.
Selection of Committee on Resolutions.
Disposition of Program. (It is proposed that the Convention itself shall decide upon the time for the discussion of each subject, and that those who are willing to attend such discussions shall fix the time. It is hoped by this plan that no speaker will be called upon to address empty seats, while the Convention members are inspecting the Exposition.)
Adjournment.

AFTERNOON SESSION

2.00 P. M.

(Unless otherwise ordered by the Convention the following program will be carried out.)

Introduction of Resolutions.
Address—"What the United States Bureau of Mines is Doing and Hopes to Do for the Metalliferous Mining Industry"—VAN H. MANNING, *Director U. S. Bureau of Mines.*
Address—"Plain Writing"—DR. GEORGE OTIS SMITH, *Director U. S. Geological Survey.*
Discussion.
Address—"Federal Influence in the Settlement of Industrial Disputes"—DR. MARTIN D. FOSTER, *Congressman from Illinois, Chairman House Committee on Mines and Mining.*
Discussion.
Adjournment. (No evening session.)

TUESDAY, SEPTEMBER 21

MORNING SESSION

10.00 A. M.

Introduction of Resolutions.
Final Report of Committee on Prevention of Mine Accidents—DR. W. R. INGALLS, *Chairman,* New York City.
Report of Committee on Uniform Mine Reports—SAMUEL A. TAYLOR, *Chairman,* Pittsburgh, Pa.
Report of Committee on Alaskan Affairs—FALCON JOSLIN, *Chairman,* Fairbanks, Alaska.
Report of Committee on Revision of Mineral Land Laws—E. B. KIRBY, *Chairman,* St. Louis, Mo.
Discussion under five-minute rule.
Paper—"Rights of Way Over the Public Domain"—HON. CHARLES S. THOMAS, *United States Senator from Colorado.*
Address—"The Right of Appeal from Decisions of the Interior Department in Cases Where the Government Is Charged with an Interest"—H. H. SCHWARTZ, Portland, Oregon.
Discussion—State versus Federal Leasing of Natural Resources Where Government Control Is Essential to Public Welfare.
Statement by the Secretary, followed by open discussion under five-minute rule.
Report of Committee on Resolutions.

12.00 NOON.

Memorial Exercises
in honor of
DR. JOSEPH A. HOLMES,

Late Director of the United States Bureau of Mines, chief inspiration of mine safety work in the United States, publicist, humanitarian, public servant, who wore out his life in the services of his fellowmen.
(Speakers to be selected.)
Report of Committee on Testimonial to Dr. Holmes.
Adjournment.

AFTERNOON SESSION

2.30 P. M.

Address—"California's Water Infiltration Law"—FLETCHER MCN. HAMILTON, *State Mineralogist,* San Francisco, Cal.
Discussion—THOMAS A. O'DONNELL, Los Angeles, Cal.; W. W. ORCUTT, Los Angeles, Cal., from the standpoint of the oil operators: RALPH ARNOLD, Los Angeles, Cal.; HARRY R. JOHNSON, Los Angeles, Cal., from the standpoint of the geologist.

EVENING SESSION

7.30 P. M.

Meeting of members for the election of Directors and general discussion of the affairs of the organization.

WEDNESDAY, SEPTEMBER 22

MORNING SESSION

10.00 A. M.

Introduction of Resolutions.
Report of Committee on Resolutions.
Report of Committee on Workmen's Compensation—J. W. DAWSON, *Chairman*, Charleston, W. Va.
Report of Committee on Freight and Ore Treatment Rates—IMER PETT, *Chairman*, Salt Lake City, Utah.
Paper—"The Development of Mine Taxation in Arizona"—G. H. DOWELL, Bisbee, Arizona.
Report of Committee on Mine Taxation—D. L. WEBB, *Chairman*, Denver, Colo.
Address—"Mining on Government Indian Reservations"—F. LYNWOOD GARRISON, Philadelphia, Pa.
Address—"Workmen's Compensation Insurance and the Coal Mining Industry"—HERBERT M. WILSON, Pittsburgh, Pa.
Address—"The New Plan of Mining Insurance"—DAVID ROSS, Springfield, Ill.
Address—"Mining Hazards on the Pacific Coast"—DR. F. L. HOFFMAN, Newark, New Jersey.
Discussion under five-minute rule.

AFTERNOON SESSION

2.00 P. M.

Report of Committee on Mining Investments—W. R. ALLEN, *Chairman*, Butte, Montana.
Address—"The Iron Resources of Utah"—PROF. FRED J. PACK, Salt Lake City, Utah.
Address—"The Future of the American Zinc Industry"—OTTO RUHL, Joplin, Missouri.
Address—"Interesting Phases of the Anthracite Coal Mining Industry"—DR. E. W. PARKER, Wilkes-Barre, Pa.
Address—"Federal Control of the Coal Mining Industry," including a discussion of the Sherman Law, the Clayton Bill, and the Federal Trade Commission—RUSH C. BUTLER, Chicago, Ill.
Discussion under the five-minute rule—Led by W. L. SAUNDERS, New York City.
Final Report of Committee on Resolutions.
Adjournment.

WEDNESDAY EVENING

A complimentary banquet will be tendered to Mr. Van H. Manning, the new Director of the United States Bureau of Mines. All mining men will be welcomed.

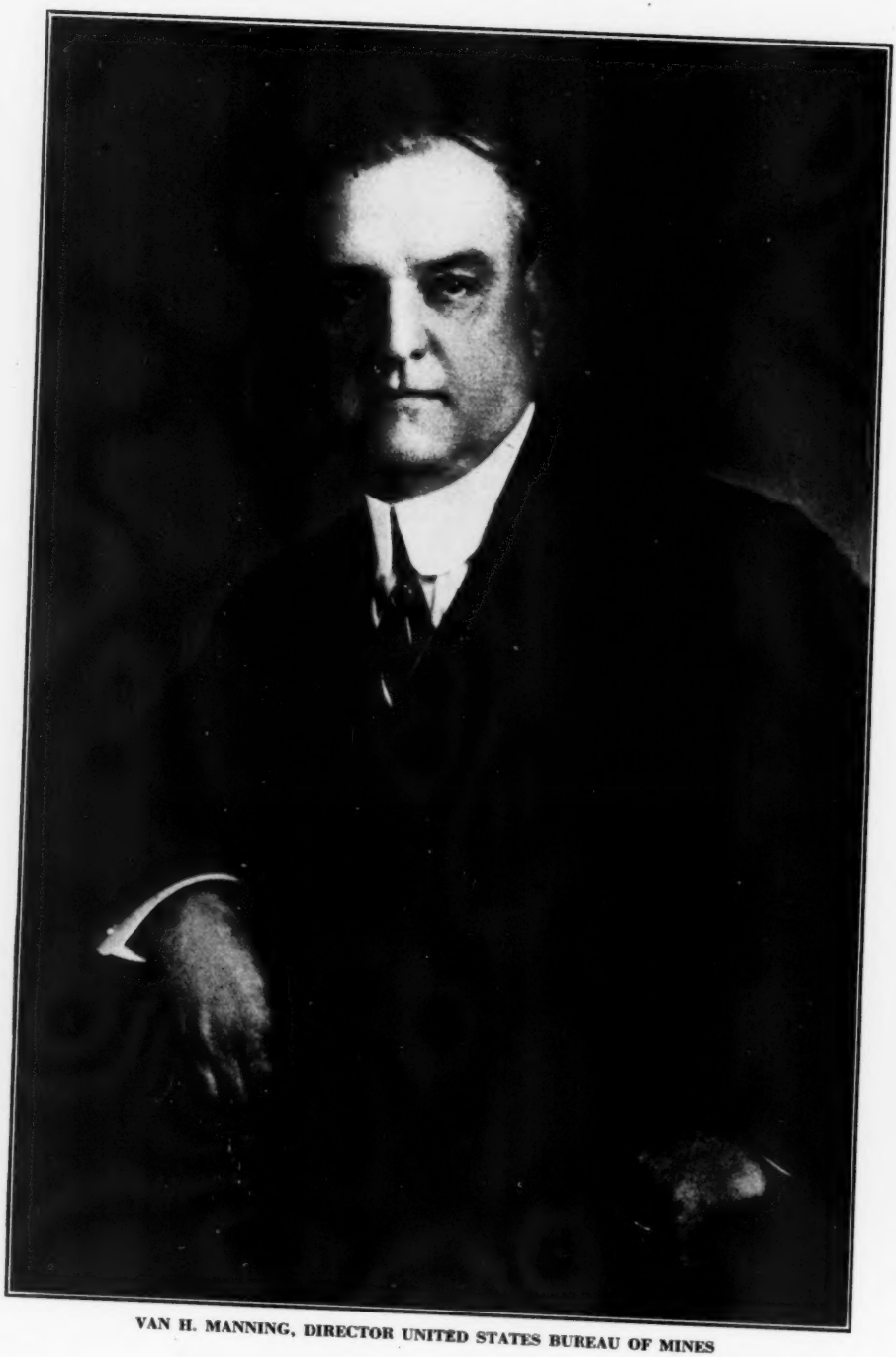
(Arrangements for invitations may be made at the office of the Secretary at the Convention headquarters, Palace Hotel.)

GENERAL STUDY ON ENRICHMENT OF SILVER ORES COMPLETED

E. S. Bastin has completed a general study of the enrichment of silver ores. Upon his return from California recently, he stopped at Virginia City, Nev., and made a study of the ores from the famous Comstock lode. In this work he is cooperating with Dr. Chase Palmer, of the Geological Survey.

Gypsum Report Completed

The report upon gypsum, stone, lime, sand and gravel has been completed for insertion in Mineral Resources in 1914.



VAN H. MANNING, DIRECTOR UNITED STATES BUREAU OF MINES

VOL. I, No. 9 WASHINGTON SEPTEMBER, 1915

THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

PRESIDENT WILSON CHOOSES VAN H. MANNING AS DIRECTOR OF BUREAU OF MINES

After the Secretary of the Interior had Considered the Names of Many Applicants He Recommends Promotion of Assistant Director—New Bureau Head Well Known to Mining Men of Country

On the recommendation of the Secretary of the Interior, President Wilson on August 27 named Van H. Manning director of the Bureau of Mines, to succeed the late Dr. Joseph A. Holmes.

Since the death of Dr. Holmes there has been considerable speculation as to his successor. A number of candidates for the directorship of this important bureau were suggested to Mr. Lane. Among this number were several men very prominent in the mining world. Mr. Manning did not apply for the post. Secretary Lane recommended him after having given full consideration to all others whose names were brought to his attention in this connection.

During the time of Dr. Holmes's protracted illness, Mr. Manning was in charge of the Bureau of Mines, of which he had been assistant director since January 1, 1911. During this time Mr. Lane had ample opportunity to familiarize himself with his abilities.

Following the announcement of Mr. Manning's appointment many telegrams and letters began to reach his office congratulating him on his promition. These communications were from State geologists, State mining inspectors, the technical press and a large number of personal friends. In addition he was felicitated by the American Mining Congress, The American Institute of Mining Engineers, The American Chemical Association, The American Mining and Metallurgy Society, The American Federation of Labor, The United Mine Workers and other organizations.

Mr. Manning was born at Horn Lake Depot, Miss., December 15, 1861. He is the son of the late Van H. Manning, Sr., who formerly represented the second Mississippi district in the House of Representatives.

He was graduated by the University of Mississippi with the degree of bachelor of arts. Later he was appointed from Mississippi to fill the place of topographic assistant on the Geological Survey. This was on February 1, 1886. The remuneration for this service was $600 a year. After a few months he was made assistant topographer.

He was promoted to the rank of topographer July 1, 1889. He continued as a topographer, with various increases in salary until July 20, 1910, when he was transferred to the newly created Bureau of Mines as chief clerk. The following January Secretary Ballinger named him acting director of the Bureau. The following year he was appointed assistant to the director. Since January 1, 1914, he has been in active charge of the Bureau owing to the illness of Dr. Holmes.

During his service with the Geological Survey Mr. Mannnig has done topographic work in nearly every State in the Union. This gave him an opportunity to become widely acquainted with mining men throughout the United States. His first work was done in New England. In 1885 he was a member of the S. H. Bodfish's party, which did work in the New England division. The following year he worked with Mr. Bodfish and his party in Massachusetts. The next season was spent in Arkansas with the party of Topographer Blair.

He took charge of his first party in 1888 and directed a survey in southern Wisconsin. For the next five years he continued his Wisconsin work. Later he had charge of a party in North Dakota. In 1895 he was transferred

to the Indian Territory division. He continued in this work through the field season of 1898. In 1899 he made his headquarters at Spokane in charge of work being done in Washington and Idaho. The next three years he spent in mapping the Coeur d'Alene mining district of Idaho and Montana.

In 1903 he had charge of work in the following quadrangles in Ohio: New Metamoros, Athens, Cutler, Dayton, Lima, Mount Sterling, Orland, Springfield, Tiffin, and Sycamore. The following year he was section chief in charge of the work in Missouri and Arkansas. His principal work was done at Forsyth, Farmington, Potosi, Mo., and Harrison, Ark. In 1905 he was section chief in charge of the Southeastern States. His principal work was done at Charlotte, N. C.; Yorktown, Buchanan and Fincastle, Va.

During the field season of 1905 Mr. Manning stayed in Washington as chairman of the committee on per diem.

The natural bridge section of Virginia received his attention in 1906. In 1907 he had charge of the Central City (Ky.) sheet. He also supervised the southern section of the Atlantic division of topography. From 1907 to July, 1910, he was a member of the business committee of the Geological Survey.

Work in the Tallahatchie drainage basin, Mississippi, in 1908 was put in charge of Mr. Manning. In the same year he did the mapping of the Atlantic City harbor. His last work with the Geological Survey was a map of the Alamo National Forest of New Mexico.

ENGLISH PUBLICATION COMMENDS BUREAU OF MINES REPORTS

Publications of the Bureau of Mines have called for the following reference by *Science and Art of Mining*, an English publication of distinction:

The United States Bureau of Mines, with a regularity worthy of commendation, supplies to American miners and officials information that cannot fail to assist in the good working of the pits. Miners' Circular No. 21 is intended to show "What a Miner Can Do to Prevent Explosions of Gas and of Coal Dust." Some of the suggestions are based upon American practice, but are of general interest.

United States Producing More Graphite

Graphite is being produced in increasing quantities in the United States. The production in 1914 was over 4,000 tons, valued at $300,000. Graphite is produced in New York, Pennsylvania, Alabama, and Motana.

California Leads Gold Producers

California mines produced more gold in 1914 than those of any other State. The output also is the greatest yielded by the mines of California since 1864, with the single exception of the year 1883. During 1914 California produced $20,563,496 worth of gold. The value of the copper output during that year was $4,057,523. The silver output is valued at $813,938.

There were 658 mines operating during that year, of this number 340 were placers.

IMMIGRATION WILL BE HEAVY AFTER WAR, DECLARES AUTHORITY

Emigration from Europe will be heavy after the war, according to Gino C. Sperenza, of the Society of Italian Emigrants of New York.

Mr. Sperenza bases his conclusion upon the fact that impoverished and tax-burdened Europe will be unable to compete with American wages. This will result in the emigration of large numbers of laborers from all countries, and particularly Italy.

He points out that Italy is accustomed to sending 1,000,000 of her children annually to foreign labor markets.

He also contends that the war will leave great masses of men, who have been raised by their trying experiences to a new outlook on life. They will not be content to begin the daily struggle for existence in their own stricken lands where opportunity will be limited. Many men who are timid and stay-at-homes by nature, will have changed into daring and adventurous spirits by their terms of enlistment in the army.

He predicts that many of these will make America their mecca.

BUREAU OF MINES PERMIT GIVEN MANNESMANN LIGHT

The Bureau of Mines has approved for safety, practicability and efficiency in general service the miners' portable electric cap lamp known as the Manlite No. 8 lamp. It is manufactured by the Mannesmann Light Company of America, 331 Fourth Avenue, New York, N. Y.

The only bulbs so far approved for use with these lamps are the bulbs identified by the symbol "C-5," manufactured by the Mannesmann Light Company of America.

This lamp will be distinguished by a plate bearing the seal of the Bureau of Mines.

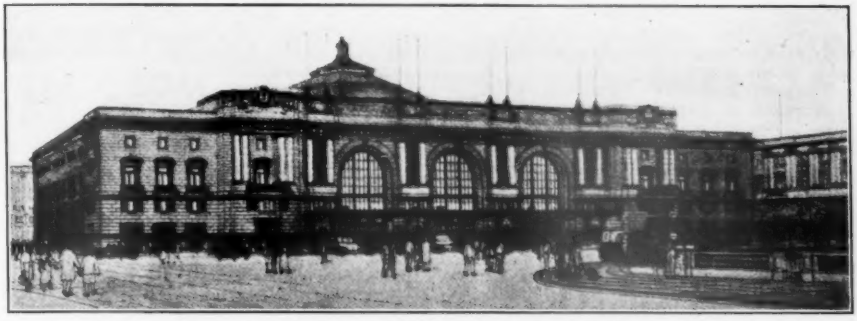
Editor Pleased with "Journal"

The August issue of the MINING CONGRESS JOURNAL was the subject of complimentary editorial comment by the *Kingman* (Ariz.) *Miner* in its issue of August 14. The editorial is as follows:

"One of the best issues of the MINING CONGRESS JOURNAL is the August number. It contains so much news of interest to the mining man that he should see that it is in his possession at once. If there is anything that should bring a miner into the fold of the American Mining Congress it is this magazine. It is worth in each issue far more than the yearly dues of the Congress."

Make Studies in Florida

Studies of the physiography of the deposition of sediments along the Florida coast and the continental shelf are being made by F. W. Vaughn and E. W. Shaw.



HALL IN WHICH MINING CONGRESS CONVENTION WILL BE HELD

MINING CONGRESS TO MEET IN MEMORIAL AUDITORIUM

Magnificent Building Will House Twenty-One Conventions at Once—Building Cost $1,250,000

The Exposition Memorial Auditorium occupies the entire block, bounded by Grove, Larkin, Hayes and Polk Streets, forming a part of the Civic Center, with the City Hall and other monumental public buildings grouped around an impressive area. This Civic Center group is located at a central point in the city, easily accessible from all sections and directly adjacent to Market Street, the wide thoroughfare leading to the gateways of the city—the ferry and steamship terminals on the water front. From the western boundary of the Civic Center, the Van Ness Avenue Municipal Street Railway leads direct to the amusement section of the Exposition. The trip from the auditorium to the Exposition grounds by street railways will take less than fifteen minutes.

The auditorium was erected by the Exposition for the special use of the congresses and conventions to meet in San Francisco in 1915. The building, with equipment, cost $1,250,000. The lot on which the auditorium is built was provided by the city at an additional expense of $701,000. Following the close of the Exposition on December 4, 1915, the auditorium will be given to the City of San Francisco as a permanent memorial of the Exposition.

The auditorium has eleven halls, each with a seating capacity of from 400 to 10,000 people. In addition to the eleven halls there are nineteen rooms suitable for committee meetings or meetings of small convention sections, each of the nineteen rooms seating from 30 to 125 people. By a system of rolling partitions the four large halls on the third and fourth floors may be converted into a maximum of fourteen halls, each with a minimum seating capacity of 250 people. With the rolling partitions in use it would be possible to hold in the auditorium at the same time twenty-one conventions, each with an attendance of from 250 to 10,000, and nineteen committee or section meetings, each with an attendance of from 30 to 125.

The building has an exterior appearance expressing its purpose and suited to its position in this group of important public buildings. The front is of stone with a large triple entrance feature with elaborate carved stone decoration and an ornamental marquise over the entrance doorways. The central portion of the building has a pyramidal tile roof with an ornamental lantern at the apex. Provision is made for exterior decorative lighting, particularly in the main arched entrance feature and on the roof.

The building is four stories high, the central portion containing a large auditorium extending through the four stories. This auditorium has a main floor 190 by 190 feet at the street level. Wide corridors surround it on all sides, except at the rear, where there are entrances directly to the street. Above the main auditorium floor there is a large balcony around three sides, extending over the corridors and other rooms on the ground floor. There are ample exits from the balcony to the corridors at the different floor levels and fourteen wide stairways extend from these corridors to the main floor, besides two passenger and two freight elevators, which run the whole height of the building; in addition, two freight elevators run from the main auditorium floor to the basement.

The interior wall and ceiling surfaces of the main auditorium are treated in an architectural and decorative manner, the ceiling following the lines of the polygonal roof with the steel trusses exposed to view, thus adding to the architectural effect. The large skylight at the top of the pyramidal roof furnishes light to the interior, and electric lights distributed on the ceiling and walls give the necessary artificial lighting.

The auditorium is entered through large vestibules and a wide corridor forming an entrance foyer. In the rear of the auditorium opposite the entrance forming a balcony, and

adjacent to the auditorium on each side a speaker's room convenient to the side corridors with entrances from the street and stairways to the upper floors.

The seating capacity of the main auditorium is estimated at 5,000 for the ground floor and 5,000 in the balcony.

In addition to the main auditorium, there are ten halls suitable for congresses and conventions. On the first floor there is a large hall on each side of the auditorium, extending through two stories, and treated in a decorative manner with beamed ceilings and with pilasters on the walls. These two halls, each 56 by 137 feet, have an unobstructed floor area like the large auditorium and each has nine entrances or exits leading directly to the street, with nine other entrances to a wide corridor extending from front to rear of building with exits and entrances to the street at each end. In front of each hall a large lobby leads to the wide corridor or foyer extending along the front portion of the building and directly opposite the lobby are main entrances to the building. A large reception room is located adjacent to the lobby and in the rear of each hall there are committee rooms each 16 by 34 feet. These committee rooms on the first floor are adjacent to the stairway to the second floor, where there are two other committee rooms. These two halls on the first floor are provided with moving-picture operating rooms fully equipped for operating moving-picture machines and stereopticons, with provision at the opposite end of each hall for screens for pictures.

The third and fourth floors have each two large halls 58 by 138 feet, with two committee rooms adjacent. By the use of rolling partitions, each of the two large halls on the third floor may be divided into two smaller halls, seating about 500 and 700, respectively. By the use of rolling partitions each of the large halls on the fourth floor may be changed into five smaller halls, each seating about 250 people. The two large halls on the fourth floor are lighted by skylights in addition to the window lighting. The third and fourth floors have also two halls each 41 by 64 feet directly connected with the larger upper halls and to the main corridor, stairways, etc., so they may be used independently.

The basement contains a kitchen and locker rooms, besides large storage spaces, lavatories for men and women, and other conveniences. There are lavatories for both men and women on all the floors above the basement, and on the second floor there are large reception rooms, retiring rooms, etc., for women. Ten checking spaces on the first floor and sixteen on the second floor, equipped with counters, racks, etc., give ample facilities for checking purposes.

All of the rooms in the building are well lighted by electricity. Provision is made for intercommunicating telephone service, call bells, etc. Heating and ventilation are supplied by fans in the basement furnishing fresh warm air to all the rooms in the most approved manner, the fresh air taking the place of the air removed from the rooms by exhaust fans on the roof.

GEOLOGIC GUIDE BOOKS CALL OUT COMPLIMENTARY COMMENT

Many letters have been received by the Geological Survey commenting favorably on the geologic guide books. "Chimmie Fadden" says: "The guide book is the most interesting public document I have ever seen."

Professor Chamberlin says: "I think it will prove a great hit. I congratulate you."

Still another variety of comment comes from a Wyoming Senator, who, in asking to have copies sent to half a dozen of his friends, said: "I want them to feel grateful, as I do, that we do not have to 'meet up' with such creatures as those depicted, who lived in the Miocene and Oligocene epochs, in our daily travels about the State."

The New York *Press* says editorially: "The notion of a government printing guide books for tourists seems a bit strange for a moment, but after all, why not? Surely every nation wishes its own citizens to take proper pride in the wonders and beauties of their own land. Nothing could better serve the end of creating closer bonds of understanding among the inhabitants of all sections than the encouragement of travel. This is good politics, considering politics in the broader, better sense. Then it is sound economics to encourage those with money to spend on recreation and education to spend it at home. So the United States Geological Survey in publishing a guide book of the Western United States has done an admirable thing.

"But this guide book is remarkable from another point of view. Besides giving all the vivid history of the West and an interesting survey of its industries and resources, the book explains scientifically, yet in entertaining style, the geological history of each region. The traveler sees petrified trees, balanced rocks, table rocks, cliffs and deserts from his car window. Uncle Sam tells him why they are as well as where they are. In respect of this, and because of its accuracy, the book surpasses anything in the way of a travel guide ever before attempted in this country."

"Know America First" gets official impetus.

"PERHAPS THE GREATEST ADVANTAGES OBTAINED FROM A CONVENTION OF MEN IN THE SAME INDUSTRY ARE THE INFORMAL CONFERENCES THAT TAKE PLACE BETWEEN INDIVIDUALS."

MINING CONGRESS CONVENTION PRESENTS UNUSUAL OPPORTUNITIES THIS YEAR

Coming Meeting in San Francisco the Most Important Held in History of Organization—Weighty Problems Facing Industry to Come Up for General Discussion—Prominent Men Will Speak

Never before has the annual convention of the Mining Congress offered the inducements for attendance as is the case this year, according to a Mining Congress official.

"The meeting at San Francisco, September 20–22, will be the most important convention in the history of the Congress. This is due to some extent to the fact that other scientific conventions the same week will insure the assembling of a great number of distinguished men who are interested directly and indirectly in mining," he says.

"Due to the war in Europe, mining has been given an expected impetus in this country. It has called attention to the necessity of America being minerally independent. After the lesson of the last year, there is no question that every effort will be bent to produce in the United States minerals for which we have been depending on Germany.

"Congress is about to reassemble. A variety of questions of greatest importance to those who operate mines will come up. Many of these questions are to be discussed at the Mining Congress Convention.

"Action will be taken there which will indicate the legislative steps desired by mine owners.

"By consulting the program which appears elsewhere in this issue, it will be noted that representative men will speak on matters of the most vital interest to the convention.

"One of the greatest advantages of any convention is the opportunity offered for exchange of views between individuals. Some who have studied the matter claim the most good accomplished by an assembly of men engaged in the same industry is the informal conferences that take place between individuals. Many of the problems presented in mining are common to a number of operators. An exchange of ideas and methods of working often result in much more successful work.

"The Panama-Pacific Exposition, with its extensive mineral exhibits, alone is sufficient inducement to draw the great majority of mine operators to the fair. Hundreds of mining men have timed their visit to the fair so as to be able to attend the Mining Congress Convention.

"As I said before, there will be a representative gathering of mining men. They will discuss more important problems than ever before have faced the industry. To miss this year's convention will be almost a calamity to any mine operator."

CHEMICAL ASSOCIATION MEMBERS HAVE SUCCESSFUL CONVENTION

Members of the American Chemical Association combined pleasure and business in attending their convention in Seattle August 31 to September 2. Members of the association, with their families, left Chicago August 26 and traveled via St. Paul to Glacier Park. They made the automobile trip to St. Mary Chalets. This included a night and a portion of two days at the Many Glacier Hotel.

The party arrived in Seattle August 30. The convention was well attended and is reported to have been a splendid success. Leaving Seattle the night of September 2, the trip to Mount Rainier National Park was made via Tacoma. A day was spent in the park. One-half day was spent in Tacoma on their return from Mount Rainier. September 4 was spent in Portland.

Practically all members of the party extended their trip to San Francisco, where they arrived September 6.

BUREAU OF MINES CHEMISTS AID ORDNANCE OFFICIALS

Chemists of the Bureau of Mines have been called upon by the War Department to assist ordnance officials in experiments with regard to the relative sensibility of certain types of explosives. The Bureau's experts have gone into the matter with great thoroughness and have written a 55-page manuscript covering their research.

AMERICA'S MOST REPRESENTATIVE MINE OPERATORS WILL ASSEMBLE AT SAN FRANCISCO SEPTEMBER 20–22.

LEAN PORTIONS OF ZINC MINES BEING WORKED—RICH ORE FOUND

Lean portions of the zinc mines through the country are being worked as the result of the high price of spelter. This is resulting in much advantageous development work and has led to the discovery of a number of high grade ore bodies. C. E. Siebenthal, of the Geological Survey, just has returned from field work in the Joplin and Miami district. He reports the greatest activity in the history of these camps.

"There are fifty churn drills going night and day in northeastern Oklahoma," says Mr. Siebenthal. "This prospecting is developing promising bodies of zinc and lead. With the coming of peace in Europe this fervor of development may decrease somewhat, but the chances are good for continued activity and sustained prices in zinc even after the war is over."

Mr. Siebenthal is working upon a mid-year report on zinc smelters. He also is writing a report on the origin of the zinc and lead deposits of the Joplin district.

TIN SMELTER AT PERTH AMBOY WILL BLOW IN JANUARY 1

Operations of the new tin smelter, being constructed by the American Smelting and Refining Company at Perth Amboy, N. J., will begin January 1, it is announced officially.

The company is now in the market for tin concentrates for the supply of this smelter.

The report that Williams, Harvey & Co., Ltd., of Cornwall, England, is interested in this smelter is denied by the American Smelting & Refining Company.

ALUNITE BEING STUDIED AS POSSIBLE POTASH SOURCE

A report is being prepared by G. F. Loughlin of the Geological Survey, covering alunite in Utah. Alunite is a possible source of potash and is attracting considerable attention at this time.

Considerable deposits of hydrus sulphate of aluminum and potash occur near Marysvale, Utah. Some work is being done upon these deposits, but as yet none of the product has been marketed. Alunite is an important source of alum in several foreign countries.

SMAREKITE CONTAINS RADIUM, BUT IT IS VALUELESS

Inquiries to the Geological Survey as to the opportunities for marketing smarekite are responsible for the investigation of a possible market for this rare metal.

So far as the Survey is informed, or has been able to ascertain, there is absolutely no market for smarekite.

It contains 10 per cent. of uranium, and, so far as is known, the only possible value is for its radium contents.

The fact that this metal is found in such small quantities and the fact that it is very refractory to treatment lead to the conclusion that it has no commercial value.

The same is true of euxinite. This metal also contains radium, but as it requires a different mode of reduction than do other ores, there is little opportunity of its being found of value, unless much larger quantities are discovered.

UNCLE SAM is conducting a multitude of activities which have a bearing on mining. Men engaged in this industry cannot afford to be out of touch with this work.

The Mining Congress Journal, the official organ of the American Mining Congress, is covering the Washington field carefully in its news columns. It offers a ready means of keeping you informed as to the efforts of these things in time to counteract them.

The Mining Congress Journal covers Congress, the Bureau of Mines, the Geological Survey, the Interstate Commerce Commission, the Supreme Court, the Land Office, the Patent Office, the Department of Labor and the other Federal offices where the work affects the mine owner or operator. State mining legislation and current decisions are featured. There are many other interesting features as to mines in the Journal.

Can you afford to be without this service?

PERIL SEEN IN PRESENT STIMULATED METAL PRICES

Arizona Engineer Advises Preparation for Inevitable Slump—Better Relations With Labor Urged

Courtenay De Kalb, an able mining engineer and economist of Tucson, Ariz., looks beyond the period of stimulated metal prices and in a letter to the American Mining Congress sets forth some of his predictions. His letter is as follows:

DEAR MR. CALLBREATH:

I deeply feel the need of organized effort for the welfare of industry. This pertains to all industry; not alone to that one in which we are chiefly interested.

I feel that it is particularly the duty of those organizations that contemplate the protection and the even development of industry to take serious account at this time of measures that may avert future disaster. The extraordinary prosperity of the mining industry under the abnormal stimulus of a world war, which has not yet involved ourselves, holds a peril which we dare not blink, and which it behooves the American Mining Congress to consider carefully.

The fever of present production is certain to suffer the chill of unresponsive markets, no matter which nation or group of nations may carry off the victory. There will come a period of liquidation after the war, a prolonged epoch of disentangling the financial skein, before active repair of the waste of war can be undertaken. Those who look forward to immediate reconstruction on any scale adequate to absorb a large metal output are reckoning falsely. There will come a time when the laboring classes will beg for work as never before, and when no man can give it to them.

We are reaping a war harvest now, and it is our duty to consider ways and means for husbanding it against the time of stress.

The relations of capital to labor are always delicate. The need of bringing the two camps into close and sympathetic relations is always urgent. Today it seems more necessary to give it serious thought than ever. It is, however, precisely during periods of prosperity that the cordial relations established by abundant work and liberal pay should facilitate most a drawing together of capital and labor for effective team work in their industrial relations. Instead they drift apart in the spirit of careless spendthrifts, and then, when the days come when they feel the need of the help which each could render to the other, there is no sense of brotherhood to prevent social and economic difficulties.

It seems to me that here is a work which the Mining Congress might undertake, that possibly may assist in keeping the mining world in a healthier condition to face the time of depression that is so sure to come. The American Mining Congress has been concerned chiefly with the operator's interests. It has drawn its membership from those whose interests are identified with the production of mineral wealth. It has not sufficiently taken into account the side of labor. Here is something omitted which should be made good. We can no more mine without labor than we can produce without mineral deposits. The conduct of mining operations is as much concerned with labor as with laws and vested rights. I am speaking as an operator in the interests of that other element whose importance we must consider, and whose interests we must safeguard. It would seem reasonable that we should appoint a committee, consisting of those who rightfully stand for labor within the Mining Congress, to represent labor and to encourage the entry of laboring men in large numbers into the membership of the Congress. Thus would the Congress become more thoroughly representative of the mining industry, and be able more adequately to fulfill its purpose. At the same time it would be proper to consider the special interests of capital through another committee; and perchance another committee representative of both labor and capital might consider those vital questions of cooperation which offer the surest means for harmonizing the interests of both which in the end will serve to keep industry from suffering disaster in times of national stringency.

There are many splendid examples of cooperation undertaken on individual initiative, but there has never been an attempt on a scale of national breadth to bring together constructively the members representative of the two fundamental branches of the mining industry to work out means for mutually protecting each other against economic waste and financial hardship. Here would seem to be a peculiar opportunity for the Mining Congress, since of all organizations within the mining world it pretends to be and is in reality the most democratic.

If these suggestions may bear fruit for the public welfare, I will be heartily glad.

COURTENAY DE KALB.

Tucson, Ariz., August 7.

BORING IN SEARCH OF POTASH OR NITRATES IS CONTINUING

Saline deposits in the red beds region of th Rocky Mountain states, Texas, and Oklahoma, continue the subject of general reconnaisance examination, with the idea of determining centers of greatest or perhaps complete evaporation of the red bed sands.

Boring in search of potash and nitrates in the pleistocene lake basins is continuing actively, at several points in the West. Drilling in the Smoke Creek desert also has been inaugurated.

ESTIMATE OF IRON ORE PRODUCTION MISSES ACTUAL QUANTITY MINED BY 239 TONS

Geological Survey's Experts Make Accurate Forecasts of Mineral Production. Quicksilver Output Estimate Is .999 Correct—Coal Figures Vary Four-tenths of One Per cent.—Petroleum "Guess" Comes Close

Director Smith has been checking up the first-of-the-calendar-year reports by the United States Geological Survey on mineral production against the detailed final figures received by the Survey from individual producers, and the result of this comparison leaves no doubt as to the essential value of the preliminary reports given to the press the first week of January.

In fact, some of the preliminary figures are so close to the final figures as to suggest to those who are fond of being critical of every endeavor of a Federal bureau that the final figures have even been doctored to correspond with the new year's estimates. For instance, E. W. Parker's estimate of the 1914 coal production was only four-tenths of 1 per cent. below the actual tonnage now known to have been mined in the United States during the year. Similarly J. D. Northrup, in tackling the more difficult matter of estimating the petroleum output, has discovered that his preliminary estimate of last January was 2 per cent. under the truth as now known. E. F. Burchard in estimating the production of the cement industry, with which he was fortunately in close touch, through the courtesies of the relatively small number of producers, came within three-tenths of 1 per cent. H. D. McCaskey, the present chief of the Division of Mineral Resources, made a preliminary estimate of the quicksilver production which is now found to be .999 correct.

The best record of all, however, was made by Mr. Burchard in connection with iron ore production. His estimate was based on preliminary reports from some fifty of the larger iron mining companies whose output the previous year had represented about 90 per cent. of the total tonnage. The preliminary figures given to the press last January stated that the "total quantity of iron ore mined in 1914 should approximate 41,440,000 long tons" but the returns as known at present by Mr. Burchard show that the actual quantity mined was only 41,439,761 long tons. Mr. Burchard's associates are now inquiring how his optimism happened to lead him to overstate the activity of the iron mines by those 239 tons. The Survey statisticians have not yet figured out the exact percentage of error in Mr. Burchard's figures.

Inspects Texas Work

George Otis Smith, director of the Geological Survey, en route to the Pacific coast, stopped in Harris County, Texas, to inspect the topographical work being done there by the Survey.

RANSOME TO STUDY DEEP WORKINGS AT GOLDFIELD

J. L. Ransome, of the Mineral Resources Division of the Geological Survey, left early in August for a trip to the West. He expects to do general geology work in California, and hopes to visit Goldfield to study the deeper workings in the mines there.

In 1907-08, Mr. Ransome made a detailed report on the Goldfield district. At that time the mining was being done in the volcanic series. Since, the shafts have penetrated into the Cambrian rocks. As a result, the ore bodies have gone through interesting changes. They are now of lower grade, carrying more copper and less gold than was the case in the volcanic overflow.

Owing to the irregularity of the Cambrian strata, they are encountered at various depths of from 1,000 to 1,700 feet.

RAY CONSOLIDATED LABOR TROUBLES ARE SETTLED

In addition to copper derived from concentrating ores at the Ray Consolidated Copper Co., there was a total of 277,851 pounds of copper contained in ores shipped direct to the smelter during the quarter ending June 30. This, combined with the copper contained in concentrates, brings the total gross production for the quarter up to 14,802,231 pounds.

The labor difficulties on the properties were fully and satisfactorily adjusted early in July and from that time forward it is expected that operations will be maintained on a full tonnage basis.

Montana Gold Output Increases

Returns on Montana's metal production for 1914 were completed last month by the Geological Survey. The yield of gold, silver, copper, lead, and zinc was valued at $47,849,747. This is a decrease of over $14,000,000 as compared with 1913. This was due principally to the war which, in its early stages, curtailed greatly the production of copper. The gold and zinc production increased decidedly during 1914. There were during 1914, 358 metal mines in Montana, in addition to 147 placer properties, being worked.

PRESIDENT SCHOLZ RECOMMENDS ACTIVE CAMPAIGN FOR NEW MEMBERS

He Points Out That One-Sixtieth of the Nation's Mining Men are Paying for Benefits Which Go to All—Work of American Mining Congress Meets with No Disapproval

There are 90,000 men in the United States directly or indirectly interested in the operation side of mining. The membership list of the American Mining Congress contains a few more than 1,500 names. Probably there are not twenty men in the 90,000 who disapprove of the objects sought by the American Mining Congress. This condition presents certain elements of unfairness which are discussed by Carl Scholz, president of the Congress, as follows:

"Since the foundation of the American Mining Congress its officials have been so busy trying to remove some of the obstacles hindering the progress of the industry that they have not had time to do much missionary work looking to membership. Before the birth of the MINING CONGRESS JOURNAL last January, there was no ready way of reaching the mining public. As a consequence the work of the Congress has not been the subject of extensive publicity. Results show that the work done has been effective. In the future we shall direct more attention toward securing the cooperation of a large number.

"The 1,500 members of the Congress have realized the importance of the work and have made possible the success already achieved.

"It is not fair to the 1,500 that they should bear all the expense of a work which necessarily benefits everyone interested in mining. I am sure that the greater part of the 90,000 will be willing to cooperate when the matter is placed clearly before them.

"With the support of only one-sixtieth of those whose support should have been given, the Mining Congress has been able to accomplish an amount of work of which it is not ashamed. During the past year especially effective strides have been taken, and the outlook for increased accomplishments are splendid.

"The Mining Congress has reached the point at present where its efficiency cannot be increased greatly without additional support. If it were possible to put squarely before each of the 90,000 the objects for which the Mining Congress is striving, I have no doubt that the large majority of them would be more than willing to contribute the small annual fee necessary for associate membership, and many would become active members, thus lending the moral support of their affiliation with the organization as well as contributing the small financial share which falls to each member.

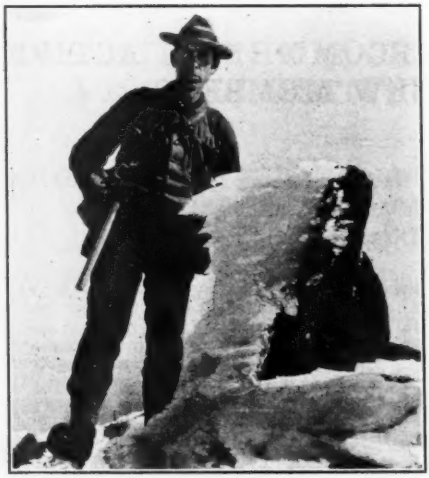
"There is no need to use illustrations and examples setting forth the remarkable accomplishments made possible by cooperation. All intelligent and observing men realize this fact. It seems that 1,500 is an inconspicuous part of the 90,000 affiliated with the operation of mines in the United States, yet this nucleus, by effective cooperation, soon could draw to itself all others in the industry.

"I am in favor of an active campaign for additional members in order to enlarge the scope of the Mining Congress work. To obtain maximum results from such a campaign it is necessary that each member of the Mining Congress do his share toward calling attention of others to the desirability of joining this movement. Generally, only a suggestion is necessary.

"My experience with mining men convinces me that they are not the kind who accept benefits without bearing their part of the burden. Consequently, the only thing it is necessary to do is to set the objects of the Congress clearly before them.

"In this day of sustained effort in all lines of industry it is difficult oftentimes to bring matters clearly to the attention of the man sought. A considerable percentage of circular letters find their way unopened into the wastebasket. Even personal letters, when dealing with matters of indirect interest, are not digested thoroughly. Too, the busy man often procrastinates. Things he fully intends to do are deferred from day to day. To overcome this we must neglect no form of approach to the mining man who has not affiliated himself with us. There must be the personal appeal. There must be letters. Perhaps there should be printed matter giving facts and figures of the accomplishments of the Mining Congress. All the personal appeals and all the letters must not come from the secretary's office. Members themselves must be active.

"There is going to be a greater call for cooperative effort on the part of mining men during the next year than ever before, if I am not mistaken. The need for this organization will continue to increase year by year. As it becomes more effective the trials and the tribulations of mining will decrease in the same ratio."



SNOW FEATHERS ON TOP OF CAPE MOUNTAIN, CAPE PRINCE OF WALES, ALASKA

This promontory divides the Arctic Ocean from Behring Sea. The snow feathers are formed by fierce wind driving the snow so swiftly that it packs against objects it strikes. The feathers stand against the wind. This photograph was taken near Bartel's and other tin deposits.

FIRST EDITION OF SURVEY'S GUIDE BOOK IS EXHAUSTED

Popularity of New Publication Exceeds Even Most Optimistic Estimates—Second Edition in Press

With the first edition exhausted of the Geological Survey's guide book covering the Northern Pacific route to the Pacific, and a second edition on the press, there is no longer any question as to the popularity of this work. It was a matter of considerable conjecture during the time the volumes were in preparation as to how they would take with the public. To secure distribution for this class of work, that will compare favorably with the publications which are mailed free on request, is difficult.

Much credit is given by Director Smith, of the Survey, to the generous editorial commendation given this guide book for its popularity. The fact that the Survey is publishing a guide book on the Baedeker plan in popular language was widely heralded by the press. The very evident need for just such a publication is proved.

Considerable credit for the large purchases of these guide books is due to the railroads, which have bought liberally for distribution.

LAND CLASSIFICATION BOARD OVERWHELMED WITH WORK

New Homestead Act Results in Greatly Increased Entry of Enlarged Homesteads

The Land Classification Board of the Geological Survey, is being overwhelmed with work as a result of the enlarged homestead act, passed on the final day of the last session of Congress.

This act governs the entry of 320-acre tracts if the lands are nonirrigable. Formerly these lands were applied for by direct letter from the applicant.

The new act changes the procedure so that the farmer who wants a 320-acre tract must file application to entry in the local land office. This gives him a preference right. The matter then is referred to the Geological Survey which determines if the land is nonirrigable. The Land Classification Board accepts or declines applications.

Under the old procedure, applications for this class of land would not average more than 400 per month.

In June, when the effect of the new act became evident, there were 1,320 applications for enlarged homestead. In July this increased to 1,700 and in August the rate of inquiries indicate a still greater increase, according to the incomplete figures available.

Each of these applications involves the solution of a technical question, which cannot be solved quickly.

With its vast store of information, collected through many years, the Survey is able to determine whether the lands on most of these tracts are irrigable or nonirrigable, by their own records. The records of the Reclamation Service and the Agricultural Department also are available to assist in this determination.

In some cases, however, field examinations are necessary before the application can be acted upon formally. Some of the entries depend upon correspondence with the entryman. Before the entry is made, the Survey may cancel its permission if an error is discovered; but sometimes the department makes a mistake in classifying land as nonirrigable which really is irrigable, but no correction can be made after the entry has been made.

At the end of July, 238,000,000 acres had been designated for entry.

"PERHAPS THE GREATEST ADVANTAGES OBTAINED FROM A CONVENTION OF MEN IN THE SAME INDUSTRY ARE THE INFORMAL CONFERENCES THAT TAKE PLACE BETWEEN INDIVIDUALS."

MINING TO HAVE IMPORTANT PLACE AT PAN AMERICAN SCIENTIFIC CONFERENCE

American Mining Congress to Cooperate Actively at Gathering of Scientific Men from Twenty-one Republics—Hennan Jennings Heads Section—Smith and Manning Direct Sub-Sections

In accordance with the resolutions of the first Pan American Scientific Congress, held in Santiago, Chile, December 25, 1908, to January 5, 1909, a Second Pan American Scientific Congress will meet in Washington next December under the auspices of the Government of the United States. The Congress will open on Monday, December 27, 1915, and adjourn on Saturday, January 8, 1916.

Mining is to have one of the important places on the program. Representative mining men from the twenty-one American republics will be in attendance. Important steps affecting the mining industry throughout the hemisphere will be taken. The conference is expected to attract an especially large delegation of American mining men to Washington. The American Mining Congress expects to cooperate actively to help make the conference a success.

The executive committee of the congress is as follows: William Phillips, A.B., Third Assistant Secretary of State, chairman, ex-officio; James Brown Scott, J.U.D., Secretary Carnegie Endowment for International Peace, vice-chairman; William H. Welch, M.D., LL.D., President, National Academy of Sciences, honorary vice-chairman; John Barrett, LL.D., Director General, Pan-American Union; W. H. Bixby, Brigadier General, U. S. A., retired; Philander P. Claxton, LL.D., Commissioner of Education; William C. Gorgas, M.D., Sc.D., Surgeon General, U. S. A.; William H. Holmes, B.S., Head Curator, Smithsonian Institution; Hennen Jennings, C.E., former president, London Institution Mining and Metallurgy; George M. Rommel, B.S., chief, Animal Husbandry Division, Bureau of Animal Industry, Department of Agriculture; L. S. Rowe, Ph.D., President, American Academy of Political and Social Science; Robert S. Woodward, Ph.D., president, Carnegie Institution of Washington.

The organization officers are John Barrett, LL.D., secretary-general, and Glen Levin Swiggett, Ph.D., assistant secretary-general.

START OF MOVEMENT

The Pan American Scientific Congress had its origin in the scientific congresses that had been held by the Republics of Latin America prior to the congress in Santiago, and was established with the generous conviction that the United States should share in their undertaking. This conviction was splendidly shown in the unsolicited and voluntary action of the first congress in the selection of Washington as the place of meeting of the second congress, the main purpose of which will be to increase the exchange of knowlede and bring about a better understanding of the ways in which the several republics can work to the advancement of science, the increase of culture, and the promotion of trade, commerce and mutual helpfulness. In view of the fact that this second congress is to be held under the auspices of the Government of the United States, it is earnestly hoped that our foremost scientists, learned societies and educational institutions will cooperate in every way possible in order to insure the success of the congress.

The program of the congress is divided into nine main sections as follows:

1. Anthrology, Mr. William H. Holmes.
2. Astronomy, Meteorology, and Seismology, Mr. Robert S. Woodward.
3. Conservation of Natural Resources, Agriculture, Irrigation and Forestry, Mr. George M. Rommel.
4. Education, Mr. P. P. Claxton.
5. Engineering, General W. H. Bixby.
6. International Law, Public Law, and Jurisprudence, Mr. James Brown Scott.
7. Mining and Metallurgy, Economic Geology, and Applied Chemistry, Mr. Hennen Jennings.
8. Public Health and Medical Science, Gen. Wm. C. Gorgas.
9. Transportation, Commerce, Finance, and Taxation, Mr. L. S. Rowe.

Each section is divided into sub-sections. There are forty-five of the latter in all, each with a special committee and program. The deliberations of the congress will be based, in consequence, according to the subject-matter to be discussed in the various sub-sections. In addition to the general sessions of the congress, there will be joint sessions between the different sections and sub-sections. Several of the leading national association of the United States, concerned with the investigation of subjects of pertinent interest to some of the sections of the congress, have received and accepted invitations from the executive committee of the second Pan-American Scientific Congress to meet in Washington at the same time and hold one or more joint sessions with a section or sub-section of corresponding interest.

The following persons will be members of the congress: The official delegates of the countries represented; the representatives of the universities, institutes, societies and scientific bodies of the countries represented; such persons in the countries participating in the congress as may be invited by the executive committee, with the approval of the countries represented; all writers of papers.

All members of the congress shall be entitled to attend its sessions, to take part in the debates and to receive a copy of such publications as the executive committee may issue. There will be no membership fee of any character.

The interest throughout Latin America for the congress is steadily growing. The executive committee is assured that all of these countries appreciate deeply the active preparations now being made in Washington for a successful meeting, and will avail themselves generously of this great opportunity for Pan-American solidarity of action in intellectual interests. Each of the participating Latin-American countries, eighteen in number, has been invited to appoint a committee to cooperate with the executive committee of the congress and make such arrangements as will insure the most generous participation of each country in the congress through the attendance of delegates and representation on the program. A feature of particular importance and appealing interest to the Latin-American countries is that of the special Pan-American topics which will be discussed at the time of the congress in a series of conferences. The various sections of the congress, and in some cases the different sub-sections, have designated certain topics to be discussed in this manner. Each country has been invited to select its most eminent writers to prepare papers on these topics, one person for each topic.

Section 7 comprises the following subjects: Mining and Metallurgy, Economic Geology, and Applied Chemistry. It will consider especially the mineral resources of the several republics, the methods by which these resources can be developed and used, and the manifold applications of chemistry in the production and utilization of materials of benefit to man.

The chairman of this section is Mr. Hennen Jennings, a former president of the London Institute of Mining and Metallurgy and member of the Institute of Civil Engineers (London), the American Institute of Mining Engineers, the South African Association of Engineers, and other national and international societies of scientific and mining interests. Mr. S. Sanford, mining engineer and editor, the United States Bureau of Mines, Washington, D. C., is the secretary of this section.

The following persons compose the committees of the four sub-sections in section 7:

1. *Mining.*

Van H. Manning, Director of the U. S. Bureau of Mines, Washington, D. C., chairman.

J. F. Callbreath, Secretary of the American Mining Congress, Washington, D. C.

Dr. C. H. Lindley, lawyer, authority on mining law, San Francisco, Cal.

E. W. Parker, Statistician, Wilkes-Barre, Pennsylvania.

H. C. Perkins, mining engineer, Washington, D. C.

G. S. Rice, Chief Mining Engineer of the U. S. Bureau of Mines, Pittsburgh, Pa.

W. L. Saunders, engineer, President of the American Institute of Mining Engineers, New York, N. Y.

B. B. Thayer, Past President of the American Institute of Mining Engineers, New York, N. Y.

2. *Metallurgy.*

W. R. Ingalls, President of the Mining and Metallurgical Society of America, and Editor of the Engineering and Mining Journal, New York, N. Y., chairman.

Dr. F. G. Cottrell, Chief Chemist of the U. S. Bureau of Mines, San Francisco, Cal.

Dr. R. H. Richards, Professor Emeritus of Mining Engineering and Metallurgy, Massachusetts Institute of Technology, Boston, Mass., former president of the American Institute of Mining Engineers.

Bradley Stoughton, metallurgical engineer, Secretary of the American Institute of Mining Engineers, New York, N. Y.

Dr. L. D. Ricketts, mining and metallurgical engineer, New York, N. Y.

Karl Eilers, metallurgical engineer, New York, N. Y.

W. R. Walker, metallurgist, New York, N. Y.

Dr. G. H. Clevenger, Professor of Metallurgy, Stanford University, Cal.

3. *Economic Geology.*

Dr. George Otis Smith, Director of the U. S. Geological Survey, Washington, D. C., chairman.

Dr. J. C. Branner, President of Stanford University, Stanford University, Cal., former President of the Geological Society of America.

Dr. J. F. Kemp, Professor of Geology, Columbia University, New York, N. Y., former President of the American Institute of Mining Engineers.

Waldemar Lindgren, Professor of Economic Geology, Massachusetts Institute of Technology, Boston, Mass.

Dr. C. R. Van Hise, President of the University of Wisconsin, Madison, Wis., former President of the Geological Society of America.

David White, Chief Geologist of the U. S. Geological Survey, Washington, D. C.

Dr. I. C. White, State Geologist of West Virginia, Morgantown, W. Va., formerly chief of the Brazilian Coal Commission.

Dr. Bailey Willis, consulting geologist to Argentine Government, Professor of Geology, Leland-Stanford University.

4. *Applied Chemistry.*

Dr. Charles E. Munroe, authority on explosives; dean of graduate studies, George Washington University, Washington, D. C.; former president of the American Chemical Society, Chairman.

Dr. Carl L. Alsberg, Chief of the Bureau of Chemistry, Department of Agriculture, Washington, D. C.

Dr. C. H. Herty, President of the American Chemical Society, Chapel Hill, N. C.

Dr. B. C. Hesse, chemist, New York, N. Y.

Dr. W. F. Hillebrand, Chief Chemist of the U. S. Bureau of Standards, Washington, D. C.; former president of the American Chemical Society.

Laurence Addicks, electrochemist; President of the American Electrochemical Society, Douglas, Ariz.

Dr. P. C. McIlhiney, chemist; Chairman of the New York Section, Society of Chemical Industry, New York, N. Y.

Dr. Harvey W. Wiley, chemist; former president of the American Chemical Society, Washington, D. C.

For this section some of the most distinguished scientists in Pan-America have been invited to prepare papers on the different subjects described in the preliminary program, edition of April 15, a copy of which may be obtained on request to the Secretary General of the Congress.

Mr. Jennings has proposed for the series of special Pan-American conferences to be discussed by all of the participating countries the following topics:

(A) *Mining.*

The mining laws of each country and the changes that may be made to aid the development of mineral resources. History of the mining industry in each country, with special reference to the beginnings of that industry.

(B) *Metallurgy.*

Development of the patio process. Present methods of concentrating ores and the development of concentration methods.

(C) *Mining and Metallurgy.*

Development of hydroelectric power for mining and metallurgy, the amount probably available, and specific benefits from its utilization.

(D) *Mining, Metallurgy and Economic Geology.*

A bibliography on economic geology, mining and metallurgy, each country to cooperate by assembling references to its own mineral resources and their development.

Attack Colorado Rates

Complaint has been entered by the Oakdale Coal Co. against the Denver & Rio Grande, attacking charges on coal removed from the company's mine at Tropic in the La Veta District of Colorado, to various interstate destinations. Reparation is asked.

BUREAU OF MINES ISSUING THREE IMPORTANT PAPERS

Three technical papers of unusual importance are to be issued soon by the Bureau of Mines. A bibliography of the Chemistry of Gas Manufacture by W. F. Rittman and M. C. Whitaker is of special interest in view of the fact that much attention is certain to be given any report made by Mr. Rittman, whose recent discoveries promise to revolutionize the method of refining gasoline, benzol and toluol.

Technical paper number 97 has to do with saving fuel in heating a house. The authors are L. P. Breckenridge and S. B. Flagg.

The composition of natural gas in twenty-five cities is the subject of another paper by G. A. Burrell and G. G. Oberfell.

SOLDIERS IN TRENCHES ASK FOR WORK ON GEOCHEMISTRY

An idea of the type of men serving in the ranks in Europe may be judged from a letter received recently by Director Smith of the Geological Survey. It was from a Montreal professor who is serving as a lieutenant in the French army. During the long waits behind the guns he is discussing with fellow soldiers matters of geology and related sciences. One of the subjects of their conversations is geochemistry. The object of the letter was to secure the Survey's publication on this subject. A later communication acknowledges the receipt of the book in the trenches.

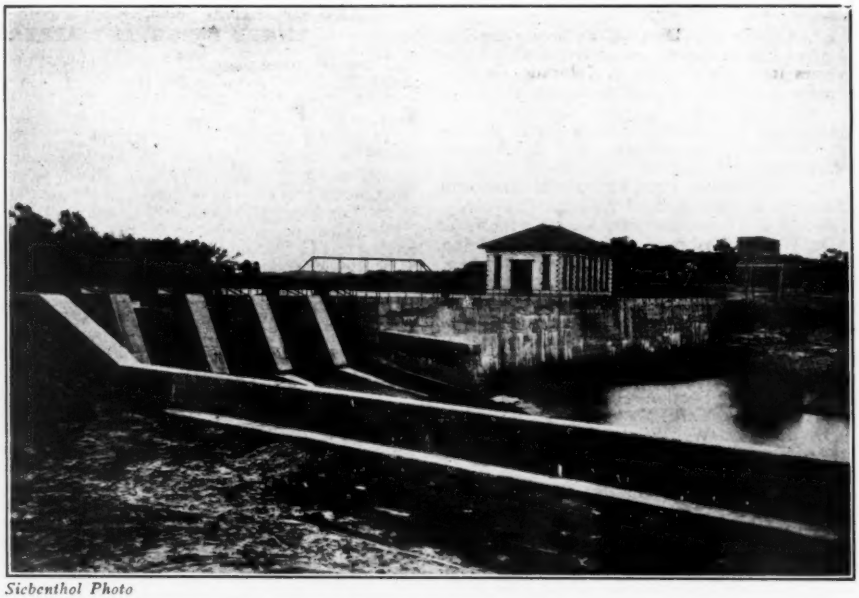
Colorado Altitudes Established

The altitudes of high peaks in Colorado have been ascertained accurately by the Geological Survey. Pike's Peak is 14,110 feet above the level of the sea. Massive Mountain is higher by nearly 400 feet; Elbert Mountain is the same height to the foot, that is, 14,402 feet. Blanca Peak is 14,390 feet high; Carlisle Peak, 14,259 feet; Evans Mountain, 14,260 feet, and La Plata Peak, 14,332 feet. In addition, a number of other mountains were found to be higher than Pike's Peak.

NEW DATA ON CALIFORNIA COPPER REGION BEING SECURED

A review of previous field work, having a bearing on the copper deposits of Shasta County, Cal., is being conducted by B. S. Butler, in charge of copper at the Geological Survey, and Prof. L. C. Graton, who is a professor of Economic Geology at Harvard University.

The result of this revision is to be incorporated into a detailed report of Shasta County, which was done by Professor Graton while connected with the Geological Survey. This report, which is quite voluminous, is nearing completion.



Siebenthol Photo

HYDROELECTRIC INSTALLATION OF EMPIRE DISTRICT ELECTRIC CO., at Lowell, Kans., supplying power to lead and zinc mills and mines of Joplin district.

AMERICA NOT EXPECTED TO LOSE ITS ATTRACTIONS TO LABORERS

The revolutionary effect of the war upon trade is surpassed by the effect upon immigration. The excess of arrivals over departures for the year ended June 30, 1915, was only 50,070. Since 1910 the range has been between 400,000 and 800,000. Naturally there is a decrease in the arrivals from all nations, the greatest decrease being in Italians, 227,882. Italians also lead in departures for home, 124,246, but the greatest decrease in departures, singularly enough, is in English men and women. Last year 120,842 English went home, and this year of war only 76,868, says the New York *Times*.

Each year since 1910, except only 1915, arrivals have exceeded a million; now they have fallen to 434,244. These figures have an important bearing upon the labor market, and it would be interesting to know whether the return flow will reach old dimensions when the war is over. The exodus from the United States just now is only partly for patriotism. War prices are paid for labor, sufficient even to tempt some Americans to go over. But after the war it may be supposed that the American bid for labor will again be the world's highest, while the war wages no longer will be paid abroad. Labor like gold goes where the bid is best, and there is no reason to suppose that after the war this country will lose its attraction.

HIGH PRICE OF ZINC CAUSES MANY IDLE SMELTERS TO BLOW IN

Due to the demand for zinc, practically every zinc smelter in the country is in operation. Even the old long-idle coal-fired zinc smelters are being used. Work is being rushed on the new smelter being built by the United States Steel Corporation at Pittsburgh. A large acid plant will be operated in connection with this smelter. Other zinc smelters are reported to be under construction in Indiana and Oklahoma.

It is feared by some that the building of large zinc smelters in the East will tend to lower the price of zinc. The big steel companies are the largest domestic consumers of spelter. It is believed that ultimately these smelters will be supplied from ores from mines owned by the company which would eliminate these big consumers from the normal market.

SEARCH FOR DREDGING GROUND CLAIMING ATTENTION IN OREGON

Reports of the Geological Survey from Oregon indicate a considerable activity in the search for dredging ground. This is in contrast to the lode mining which, generally speaking, is dull. The interest in placer mining is due largely to the success of the dredge in the Powder River near Sumpter, Ore.

MINING CONGRESS COMMITTEE LAYS FOUNDATION FOR UNIFORM STATE LAWS

Working with Bureau of Mines "Rules and Regulations for Metal Mines" are Formulated—Expected to Form Basis of Private Systems of Inspection Looking to Greater Safety

A publication of considerable interest to the metal mining districts of the United States has just been issued by the Bureau of Mines under the title, "Rules and Regulations for Metal Mines." It is to be known at Bulletin 75 and the authors are W. R. Ingalls, J. Parke Channing, James Douglas, James R. Finlay, and John Hays Hammond. The committee was originally appointed at a meeting of the American Mining Congress at Denver, Colo., in November, 1906, and its object was the drafting of a modern law governing quarrying and metalliferous mining which could be recommended to the several States for adoption, in the hope that the passage of such a uniform law by the mining States would tend to lower the number of fatal and serious accidents.

When the committee took up its work it found that Colorado, Missouri, Montana and New York were the only States that had enacted mining laws of broad scope applicable to other than coal mines. California, Arizona, Idaho, Kansas, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, South Dakota, Tennessee, Utah, Washington, and Wyoming were found to have statutes pertaining to metalliferous mining, but with few and incomplete safety provisions.

This committee of the American Mining Congress did considerable work along this line and made a number of reports. In April, 1911, Dr. Joseph A. Holmes, director of the Bureau of Mines, invited the committee to serve as a committee of that bureau with the idea of preparing a final draft of a law, and this was accepted.

Starting with a composite of existing laws, the committee by successive stages endeavored to work out a general law that would embody the best mining thought of the day, be in accord with approved modern mining practices, and yet at the same time be effective and practice in operation, and not merely a collection of rules and regulations to be disregarded or enforced at will.

The committee in discussing its report says: "We have found that a great deal of interest and attention among mine operators has been awakened by our advocacy of improved means for promoting safety in mining. However, we are under no illusions that our recommendations will be immediately and generally adopted. We consider our work to be especially of educational character rather than anything else. It will be useful in three main ways, we think, as follows:

"1. As a basis for State legislation.

"2. As a basis for private systems of inspection.

"3. As a collection of simple rules for the guidance of everybody engaged in mining.

"Since the publication of our first report, several States have adopted new mining laws and amended their old ones. In this connection our code has served some purpose; for example, in the drafting of the laws that now stand on the books of the States of Nevada and Arizona. We do not expect that any State will at once adopt all of our recommendations, especially those that are essentially of legal character. We offer them as what we think ought to be and hope some day will be.

"Since our first publication, furthermore, most of the mining companies of consequence have adopted inspection systems or have at least framed codes of safety rules, which have been based to a large extent on our code, notably so in the case of the Cleveland-Cliffs Iron Co. This tendency, in fact, has become one of the most important phases in the national movement for 'safety first.' This is the gratifying consummation that we had in mind. Unquestionably, also, the widespread adoption of State laws providing compensation for injured workmen has helped the safety movement by making accident prevention worth while.

"We consider, however, that the chief usefulness of the code of rules that we have formulated will be to small operators, who frequently engage in unsafe practices without knowing that they are unsafe or without thinking about the matter at all. There is a reasonable hope that our report will be of educational value to all mining operators.

"The act that we have drafted may be regarded from two angles—from the legal and from the technical. With respect to the latter we have had in mind the conditions and practice of mining existing and prevailing in the several parts of the United States. In our treatment of the matter from the legal standpoint, in which we have had the advice of good lawyers, we have refused to clothe the inspector of mines with the optional powers that are given to him under the laws of many of the British colonies, and, also, we

have refused to convey to him the sweeping power that is given to health inspectors in some of our own States.

"The code of mining rules that has been finally drafted by the committee is the coordination of the experiences, opinions, and suggestions of a great many men who have assisted the committee in an advisory capacity and as directly employed aids. The former have included many engineers actively engaged in practice, members of professional societies, and members of the bar; the latter have included members of the regular staff of the Bureau of Mines and of the personal staffs of members of the committee. The committee has sought to obtain many points of view and to summarize many experiences. The draft that has been prepared is not offered as the last word upon this subject. There are many phases of this subject with which the committee has been unable to deal thoroughly. Thus the committee confesses its inability to formulate at the present time adequate rules covering the important subject of ventilation of mines. Similarly there are many practices in open-cut mining, by steam shovels, etc., regarding which the committee has felt unable to formulate rules. We feel, however, that the rules so far as prescribed may advantageously be applied to open mining whether it be simple quarrying or the extraction of metalliferous mineral, as well as to underground mining."

COAL MINES IN LEAVENWORTH DISTRICT SUBJECT OF REPORT

A report on the Leavenworth and Smithville coal fields of Kansas and Missouri will be published by the Geological Survey within the next three months.

The report is the work of Henry Hinds and F. C. Green. It will show the structure of rocks in that region, indicating the most favorable places to prospect for oil and gas.

This coal mining region is noted as having the deepest mines in the Middle West. Shafts have been sunk to a depth of 720 feet to coal veins twenty-two inches thick. The coal is mostly low grade. Still the mining is done at a profit. This is made possible by the fact that this is the only coal mined in important counties in this section of the country. It enjoys a splendid market at Leavenworth, where State and Federal institutions and manufacturing plants are heavy purchasers. One of these mines just has been worked out after 40 years of producing.

IRON ORE PRODUCTION FALLS OFF 32 PER CENT IN 1914

There was a decrease of 32 per cent in the amount of iron ore mined in the United States during 1914. The total production of American mines was 41,500,000 tons.

Minnesota led all other States as an iron producer, with Michigan, Alabama, Wisconsin, and New York in second, third, fourth, and fifth places, respectively.

GEOLOGICAL SURVEY POINTS WAY TO NEW OIL FIELD

An example of the practical value of geological investigations of oil fields is shown in the Colmar district of Illinois.

Henry Hinds, of the Geological Survey, indicated the possibility of the occurrence of oil in this district, when it was not known that oil existed in that part of the State.

Drilling developed presence of oil in quantities. One hundred and eighty wells have been drilled in the last year of which 130 were productive.

PLATINUM PRODUCTION IN U. S. REACHING IMPORTANT FIGURE

Patinum production in Cailfornia and Oregon is beginning to reach an important figure. Five hundred and seventy ounces of crude platinum were recorded in 1914, an increase of nearly 100 ounces over the production of 1913.

The platinum extracted from this yield was valued at $23,625. The market price of platinum is $45 an ounce.

In addition to the platinum recovered from placer mines, 2,900 ounces were recovered at smelters and refineries.

Not all of this latter yield, however, came from domestic ore.

BUREAU OF MINES' REPORTS BEING USED AS TEXTBOOKS

Bulletins of the Bureau of Mines are being used as textbooks in the instruction department of the Copper Queen Consolidated Mining Co. An extract from a recent letter from this company to the Bureau of Mines is as follows:

"We are using your bulletins in the form of textbooks for our mining men in our instruction department, and I believe in the near future they will be used by many of the larger companies for the same purpose."

Canadian Annual Report Out

The annual report of the Canadian Geological Survey for 1914 has been issued. It contains a large amount of very valuable data on the geology of the Dominion.

AMERICA'S MOST REPRESENTATIVE MINE OPERATORS WILL ASSEMBLE AT SAN FRANCISCO SEPTEMBER 20-22.

AMERICAN MINING CONGRESS COMMITTEE TO CONSIDER HOLMES MEMORIAL

Body of Twenty-one Will Meet at San Francisco to Discuss Plans—Will Cooperate with Other Committees—Statue, Scholarship and Award Among Suggestions Submitted—Engineers Name Committee

In order to make certain the selection of a suitable memorial for the late Dr. Joseph A. Holmes, the American Mining Congress has selected a committee of twenty-one from its membership to consider this important matter. This committee is instructed to cooperate with committees that may be appointed by other organizations.

The committee is composed of the following: Samuel A. Taylor, Second National Bank Bldg., Pittsburgh, Pa.; George H. Cushing, 1112 Manhattan Bldg., Chicago, Ill.; J. H. Richards, Boise, Idaho; C. W. Goodale, Butte, Mont.; H. N. Lawrie, Yeon Bldg., Portland, Ore.; B. F. Millard, Valdez, Alaska; Dr. David T. Day, Washington, D. C.; J. C. Kolsem, Terre Haute, Ind.; W. R. Woodford, Rockefeller Bldg., Cleveland, Ohio; T. H. O'Brien, Dawson, N. Mex.; Will L. Clark, Jerome, Ariz.; John Hays Hammond, 71 Broadway, New York City; Charles S. Keith, Keith & Perry Bldg., Kansas City, Mo.; Thomas B. Stearns, Denver, Colo.; Jesse Knight, Provo, Utah; M. D. Leehey, Alaska Bldg., Seattle, Wash.; Dr. I. C. White, Morgantown, W. Va.; P. J. Quealy, Kemmerer, Wyo.; Dr. Joseph Hyde Pratt, Chapel Hill, N. C.; Dr. E. W. Parker, Miners' Bank Bldg., Wilkes-Barre, Pa., and William Griffith, Coal Exchange, Scranton, Pa.

This committee will meet at San Francisco during the Mining Congress convention to decide upon a memorial plan.

ENGINEERS' COMMITTEE NAMED

D. W. Brunton, of Denver, formerly president of the American Mining Congress; Hennan Jennings, Washington, D. C., formerly vice-president of the American Mining Congress, and Van H. Manning, director of the Bureau of Mines, have been selected by the American Institute of Mining Engineers as a committee to make arrangements for this memorial. As the members of the committee will be in San Francisco to attend the annual meeting of the Mining Congress it has been decided to take up this matter at that time.

Mr. Manning is in receipt of the following memorandum dealing with the form that the memorial should take:

1. A monument to be erected over Dr. Holmes's grave in Rock Creek Cemetery:

(a) Few people would ever see this monument.

(b) Dr. Holmes's family is able, and has undoubtedly already taken steps to provide such a monument.

(c) This method would not keep alive the memory of Dr. Holmes.

2. A memorial volume.

(a) The book would be placed on the shelf and forgotten after a time.

(b) Dr. Holmes's writings were not voluminous and such a volume would have to be made up largely of contributions from friends and associates.

(c) There would be the usual delays incident to the publication of such a volume.

DR. DOUGLAS'S SUGGESTIONS

3. A scholarship (suggested by Dr. Douglas); a fellowship; or a professorship.

(a) A practical difficulty would be the selection of the institution to control such a scholarship, fellowship, or professorship. Neither Cornell University nor the University of North Carolina has a high-ranking Department of Mines.

(b) Dr. Holmes did not have preeminent rank as a geologist, mining engineer, or in any of the lines relating to mining engineering which form departments in colleges or universities.

(c) The matter already has been taken care of by Dr. Phillips in the establishment at the Colorado School of Mines of the Joseph A. Holmes Professorship of Safety Engineering.

4. It would be an easy matter to raise a fund of two or three hundred thousand dollars by going to the miners of the country and asking for small contributions, but such a large fund, collected from all classes of men engaged in the mining industry, should have a larger object than providing the monument or the memorial volume, or the scholarship in a college or university, referred to above. Such a fund, called the Joseph A. Holmes Foundation, or Fund, might properly be devoted to the relief of widows and children of miners killed in mine accidents: But

(a) Two hundred thousand dollars at 4 per cent. would be only $8,000 a year, which would be entirely insufficient for this purpose.

(c) The matter is being pretty well taken care of by the Workmen's Compensation acts of the different states.

(c) The cost of administering such a fund would eat up a considerable part of the annual income.

The following method of perpetuating Dr. Holmes's memory is suggested as a substitute:

THE HOLMES AWARD

An annual award to the person contributing most during each year to the increase of safety in the mineral industries of the United States.

(a) This method has the advantage of elasticity. If the funds collected for this purpose amount to, say, only a couple of thousand dollars, the income would be eighty or a hundred dollars a year, which would provide for a suitable gold medal to be presented each year to the person contributing most to increased safety in the mineral industries. If the fund should amount to, say, $25,000, the income from this fund at 4 per cent. would be $1,000 a year, which award would frequently go to some research worker to be used in the furtherance of research work looking to the promotion of safety in the mining industries.

(b) While the American Society of Mechanical Engineers has its Fritz medal, a Holmes medal awarded each year by a committee of the American Institute of Mining Engineers would be an appropriate way of handling the matter, nevertheless, we think that "The Holmes Award" should be under the control of the American Academy of Sciences. Dr. Holmes was probably more intimately connected with this scientific body than with any other of the numerous organizations of which he was a member. Also the American Academy of Sciences has a quasi-governmental status, being under the law a body advisory to the Federal Government.

MEDAL PLAN OUTLINED

If the money collected amounts to no more than $2,000 or $2,500, the memorial to Dr. Holmes might well take the form of a medal to be awarded annually, and the fund itself, and the award of this medal, might properly be under the control of the American Institute of Mining Engineers. But if the fund collected should amount to as much as $25,000, we think that such a fund should be controlled by the American Academy of Sciences, and the income from the fund awarded by a committee of that body, which committee should of course include in its membership a representative or representatives of the American Institute of Mining Engineers.

(c) This method would keep alive Dr. Holmes's memory, because each year the committee would meet to make the award; a dinner would doubtless be given in honor of the person receiving the award; and there would be wide mention of the award in the technical press and in the newspapers of the country.

(d) If the fund raised should be large enough to permit of a money award each year, this would mean that the income of the fund would in all probability be a continuing amount devoted each year to research work along the lines of Dr. Holmes's life work, *i. e.*, making safer the work of the men who go down into the mines.

A memorial tablet should be placed in the main entrance hall of the new Pittsburgh building of the Bureau of Mines. Mr. Rice suggests a bronze bust, but, aside from the difficulty of obtaining an accurate likeness, the tablet, with appropriate inscription, would be a better idea; the employes of the Bureau of Mines to provide this tablet.

George S. Rice, Chief Mining engineer of the Bureau of Mines, in charge of the station at Pittsburgh, suggests the erection of a monument at the grave along the lines of St. Gaudens' famous "Grief" in Rock Creek Cemetery, which has attracted much attention in the United States and abroad.

Mr. Rice also suggests, in case the other project is not found feasible, to compile a volume containing a sketch of Dr. Holmes' life; views of his work by a select number; resolutions by technical societies and selections from his writings.

COLORADO SCHOOL OF MINES CREATES HOLMES MEMORIAL

Professorship of Safety and Efficiency Engineering to Stand as Monument to Late Scientist

The Colorado School of Mines trustees recently created the Joseph A. Holmes professorship of safety and efficiency engineering in honor of the late Government official. The action was taken by the following resolution:

"Whereas, The late Joseph A. Holmes, director of the United States Bureau of Mines from the date of its creation, May 16, 1910, until his death in Denver, July 13, 1915, devoted his life to the advancement of safety and efficiency in the mining and metallurgical industries of the entire country; and

"Whereas, It is meet and proper that a lasting memorial to him should be established and maintained; therefore be it

"Resolved, By the board of trustees of the Colorado State School of Mines, that there be and hereby is created a full chair in this institution to be known as the Joseph A. Holmes professorship of safety and efficiency engineering; be it further

"Resolved, That all subjects essentially comprised under the term of 'safety and efficiency engineering' now taught at this institution be transferred to this new professorship; be it further

"Resolved, That the president of the school be authorized to recommend to this board, at some future meeting, names to be considered with this professorship as suitable candidates."

BUREAU OF MINES ADDS 338 MILLIGRAMS TO RADIUM STOCK

During July 338 milligrams of radium metal were produced by the Bureau of Mines. The value of this radium is $40,560. The Bureau of Mines has recovered all together 1,646 milligrams of radium metal.

Dr. Charles L. Parsons, in charge of the Division of Mineral Technology at the Bureau of Mines, is now in the West. He will visit the radium mines in Paradox Valley and will inspect the Denver laboratory. Dr. Parsons will return to Washington October 10.

MINE OWNERS IN PENNSYLVANIA VICTIMS OF ANTIQUATED TAXATION LAWS

Valuation Is Based on Laws Sixty-five Years Old—Value of Property Must Be Judged by Assessor—Advice from Technical Men Frowned upon by the Courts—Public Just Awakening

By William Griffith[1]

The mine "taxation system" in the State of Pennsylvania reminds me of the farmer, who after intently contemplating the giraffe at the "Zoo" turned to his friend and said, "Well, by gum, there ain't no such animal," because, although we tax coal in some counties in Pennsylvania, there is no general system of *mineral* valuation and taxation for the State. The valuation and taxation of real estate in Pennsylvania are based on some ancient laws. The act of 1841 provides:

"And from and after the passage of this act, it shall be the duty of the several assessors and assistant assessors, to assess, rate and value all objects of taxation, whether for State, county, city, district, ward, township or borough purposes, according to the actual value thereof and at such rates and prices for which the same would separately *bona fide* sell."

The act of 1842 prescribes the form of oath to be taken by assessors, which requires that

"Assessors shall justly and honestly, and to the best of their judgment, assess and value every separate lot, piece or tract of land with improvements thereon, and all personal property made taxable by the laws of this commonwealth, within their respective districts, at a rate or price, which they, the assessors, shall after due examination and consideration, *believe* the same would sell for, if sold singly and separately at a *bona fide* sale *after full public notice.*"

Another section of the same act provides, that the county commissioners may sit as a Board of Revision and inquire whether "all property to be valued for taxation for State and county purposes has been valued at a sum or price not less than the same would bring *after full public notice at public sale*, supposing each separate lot, or piece or tract of land with all improvements, or the personal property of each individual, company or corporation only were to be sold."

It will be noted that the above antiquated laws were enacted for the sole purpose of valuing surface lands for taxation purposes and were not intended to cover the subject of valuation of mineral lands, but in the absence of any other law, the counties of this State are now forced for purposes of mineral taxation to adapt these old laws to purposes for which they were never intended and are in no wise fitted, and which actually work injustice wherever they are applied—thus resulting in an endless succession of tax appeals and hearings and rehearings, etc. Very discouraging and costly for both land owners and county authorities, for both insist in employing lawyers to do the appealing, and engineers to do the valuing, and if the reports of the latter contain any hint or disclosure of system, or plan, good judgment, or intelligence in *method*, of arriving at values, the chances are that the courts will declare such valuation illegal or void, because not in accord with the above laws, which plainly provide that the assessor, "who may be the ice man or plumber," shall value the lands at a price, which after due examination *he believes* the same would *publicly sell for after full public notice.* Expert knowledge of mineral values, present-worth royalties, quantities and qualities, etc., etc., and *methods of deducing taxable values* therefrom not being contemplated by the above law and, therefore, illegal in Pennsylvania. Although Pennsylvania is one of the first mining States in the Union, the citizens are but just awakening to the evident injustice imposed upon them through the lack of system in the taxation of mineral lands.

UTAH COPPER CO. MAKES NEW HIGH RECORD

During the quarter ending June 30 there was treated at both plants of the Utah Copper Co. a total of 2,215,159 tons of ore, as compared with 1,396,341 tons for the previous quarter. The tonnage handled during the quarter was the largest ever treated during any one quarter in the history of the property, the previous high record having been for the fourth quarter of the year 1913, when a total of 2,113,080 tons was milled. The average grade of the ore milled was 1.42 per cent. copper, as compared with 1.44 per cent. copper for the first quarter of the year, and the average extraction was 64.85 per cent. The extraction was low partly because the ore, at times, contained considerable copper in the form of carbonates, but principally on account of the very large tonnage of ore treated.

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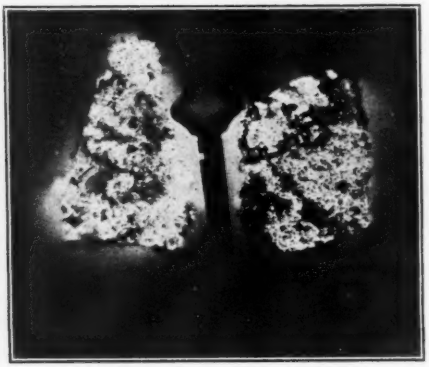
[1]Mining Engineer and Geologist, Coal Exchange Building, Scranton, Pa.



Radiograph Made by Specimen of Pitch Blende from the Wood Mines, Gilpin County, Colo. Twenty-four Hours Exposure, Rough Surface.

BLACK DIAMOND FAVORED MANNING FOR DIRECTOR

In the issue of *Black Diamond* of August 7 the following editorial appears:

"When William Jennings Bryan went off on a peace debauch and resigned from President Wilson's cabinet, the newspapers and everybody began to speculate on who would be his successor. They expected President Wilson to do the customary thing and hence to search for some conspicuous figurehead who could fill the position and reap the honors while some efficient somebody else did the practical work.

"That was not President Wilson's idea, however. Instead, he promoted the next in line. He got, for once, a Secretary of State who really can do the work of the Department of State. Secretary Lansing is living up to the nation's expectations in every particular.

"On a smaller scale, a similar problem is presenting itself at Washington. Dr. Holmes, the director of the Bureau of Mines, died recently. A new man must be selected to fill his place. Most commentators have been looking around to find a conspicuous man to adorn the title—or—while some one else does the work, be adorned by it.

"In the meantime, there is in the bureau now a very efficient person by the name of Van H. Manning. He has been the assistant of Dr. Holmes. For the last year he has been acting director of the Bureau of Mines. Many of the things which Dr. Holmes could not find time to do, Mr. Manning has done. Many of the papers and reports which Dr. Holmes did not have time to write or edit, Mr. Manning has 'whipped into shape.' He knows the work of the bureau because he has been in it for a long time.

"As assistant director, he is in line for promotion. So far as we can see now, there is no good or sufficient reason why President Wilson should not follow his own precedent and promote Mr. Manning to the head of the bureau.

"If promoting the next man in line to the bigger position, because he showed a particular fitness for the work, were adopted in the Government bureaus, it would be a first-rate thing for the public work in general. It would teach employes of various bureaus and departments that they were not merely under Civil Service, but that they might come to occupy conspicuous positions if they learned their jobs.

"This is what Mr. Manning has done, so we are informed, and it would be a mighty good thing to recognize that fact by his promotion."

MOLYBDENITE TREATED BY ONLY ONE AMERICAN FIRM

Molybdenite is treated by only one firm in the United States, so far as is known to the Geological Survey. Henry E. Wood & Co., of 1734 Arapabol, Denver, Colo., is handling custom molybdenite ores.

In response to numerous inquiries which have been reaching the American Mining Congress as to buyers of antimony and molybdenite, the following list of companies, understood to be in the market for these minerals, is given:

Purchasers of molybdenite are: Baker-Adamson Chemical Co., Easton, Pa.; J. T. Baker Chemical Co., Phillipsburg, N. J.; Goldschmidt Thermit Co., 90 West Street, New York, and the York Metal & Alloys Co., York, Pa.

Buyers of antimony are as follows: Magnolia Metal Co., 113-15 Bank Street, New York City; M. Elsasser, 625 Security Building, Los Angeles, Cal.; C. Solomon, Jr. (Chapman Smelting Co.), 509 Battery Street, San Francisco, Cal.; Wm. Wraith, manager, International Smelting Co., Salt Lake City, Utah; Edw. Hill's Son & Co., Inc., 65 Wall Street, New York City; Pennsylvania Smelting Co., Pittsburgh, Pa.; Hoyt Metal Co., St. Louis, Mo.; A. D. Mackay, 130 Pearl Street, New York City; Atkins, Kroll & Co., San Francisco, Cal.; Philipps Bros., 42 Broadway, New York City; C. W. Hill Chemical Co., 320 South San Pedro Street, Los Angeles, Cal.

Map Scranton Coal District

A base map of the northern Pennsylvania anthracite region is being prepared by the Geological Survey. It will include the Scranton and Wilkes-Barre regions, extending from Shickshinny to Forest City. It will cover an area of 450 square miles. This map is to be used in connection with a report being prepared by N. H. Darton.

THANKS AMERICAN MINING CONGRESS FOR ARIZONA WORK

F. M. Murphy Points Out Advantages to Come from Meeting of Mining Men at San Francisco

The Secretary of the American Mining Congress is in receipt of the following letter:

MY DEAR MR. CALLBREATH:

I am a constant and appreciative reader of the MINING CONGRESS JOURNAL, and am pleased to observe that extensive plans have been made for the meeting to be held in San Francisco, in the near future. From what I have heard, a large attendance of influential and controlling factors in the mining business is assured, and much good will doubtless result.

Representative mining men as a rule, take an important part in all branches of business, and when they get together, the business pulse of the country is quickened and strengthened. All matters of substantial interest are sure to be considered. Attention will not be limited to mining, as men of the kind mentioned have no limitation when it comes to doing or talking business and considering matters of general interest, once their attention is diverted from many problems that have heretofore confronted them in the ordinary course of the particular business in which they are largely absorbed, giving their minds a chance to delve into the many important factors that go to make up a successful whole.

The meeting of the Mining Congress, so soon to take place, brings together a large proportion of the essential and controlling influences upon which the prosperity of our country depends. It is gratifying to find that business men generally, are waking up to the importance and necessity of giving a larger part of the time they have heretofore given to working out economics in their business, and forming combinations, to trying to find out what the trouble is that stands in the way of general prosperity throughout these United States, and are taking steps necessary to remove the difficulties, giving business a chance.

Here in Arizona, largely due to the influence and activity of The American Mining Congress, we have what is known as the Arizona Chapter of The American Mining Congress, having as its members the most influential and substantial citizens of our State,—men whose judgment is accepted by those who do not have the time, even if they have the inclination, to follow up as closely as is necessary the most important features of our industrial and political life. Steps are being taken to obtain and record for analysis, complete data upon which to determine the best line of procedure to be followed in the conduct of the affairs of our State, calculated to bring to each and every citizen his or her full deserts regardless of calling. When the statistics have been obtained, the Board of Directors, supported by the members of the Chapter, and those having the welfare of the State at heart, in the interest of all, will formulate a line of procedure from which the best possible results can be obtained, eliminating the political schemer, always ready to concede and trade on all questions and points for personal advantage, while the business men, the taxpayers, including the day laborer, who needs and should have an opportunity to work at good pay, but can not get it under existing conditions, are footing the extravagant bills, in addition to being obliged to do the little business that is done under such embarrassing and harrassing conditions as to make prosperous conditions impossible. The business men can and must come to the front, and lead the way, as they have undertaken to do through the Arizona Chapter of The American Mining Congress.

Thanks to The American Mining Congress for helping Arizona get started on the right track.

F. M. MURPHY.

Prescott, Ariz., August 13, 1915.

Dr. Ashley Inspects Field Work

Dr. G. H. Ashley, of the Geological Survey, just has returned from an inspection trip to the Wellsville, Ohio, quadrangle where J. H. Hance and his party are working.

He also visited the Hulzdale, Pa., quadrangle, to secure certain details for work now being completed in the office of the Survey.

Dr. Ashley spent a few days in the office last month and then left for the Crossville quadrangle in Tennessee where the Survey is cooperating with the State Geological Survey.

LEAD AND ZINC PRICES CAUSE FLOOD OF LETTERS

The Bureau of Mines and the Geological Survey are being called upon to handle a large amount of correspondence originating with persons desiring information as to lead and zinc. The present high price of the metals has stimulated interest and all owners of prospects, showing an occurrence of either or both of these minerals, are anxious to secure additional information in regard to them.

CONTRIBUTES IMPORTANTLY TO CANAL TONNAGE

Traffic through the Panama Canal for the fiscal year ending June 30 shows many interesting features. It must be taken into consideration, however, that the canal was in operation only seven-eighths of the year.

Mineral productions contribute considerable tonnage to the total. Some of the most important items are nitrates, 651,948 tons; coal, 286,564 tons; refined petroleum, 252,428 tons; iron ore, 86,104 tons; copper, 49,799 tons; tin, 30,584 tons; copper ore, 20,740 tons; coke, 20,444 tons.

Mineral tonnage through the canal will increase greatly with the restoration of normal conditions in Europe.

TOPOGRAPHER'S WORK HIGHLY NECESSARY TO SYSTEMATIC MINING OPERATIONS

Basic Maps Must Be Made Before Geologists and Mining Engineers Can Work Intelligently and Accurately—Chief Geographer Inspects Mining Areas

Topographic maps have an important and intimate bearing on mining that often goes unrecognized. It is the foundation which must be laid before mining and other operations can be conducted intelligently. The topographer must do his work before the geologist can do more than make a preliminary reconnaissance. He is just as necessary to successful work on the part of the geologist as the preliminary work on the part of the geologist is necessary for accurate work on the part of the mining engineer, who follows the geologist into the new mining camp. The topographical findings are the mother maps so necessary to the work of engineers and geologists. They permit civil engineers to sit in their offices and plan trolley lines and locate railroads. They make it possible for geologists to go into areas and with rapidity and accuracy record the outcrops and the various other features necessary to their work.

PRECEDES GEOLGIST

Every year the chief geologist of the Geological Survey prepares a list of areas which are to receive attention by the geologists. This list is turned over to the chief geographer, who immediately takes steps to precede the work of the geologists by the making of topographical maps.

The value of these maps is indicated by the fact that the Geological Survey sells each year more than 500,000 copies to the general public.

The importance of topographical work was outlined clearly by Dr. George Otis Smith in a recent address. He said:

> The foundation work of the Survey is its map making. It employs more than 200 topographical engineers and many more temporary field assistants, who are engaged in making topographic base maps of the United States, a work in which many of the individual States cooperate with the Survey. Over 2,300 of these maps, representing about 40 per cent of the area of the United States, have been published, and the mapping is progressing at the rate of about 20,000 square miles a year.
>
> Although most of these maps are uniform in size, they are published on different scales, the scale depending on the need for greater or less detail of mapping in the region covered.

HOW MAP IS MADE

These topographic maps are printed in three colors, so as to distinguish clearly the three kinds of features shown. Black is used to indicate roads, houses, and names—the human features of the map—and blue is used to indicate the streams and lakes and other water features, and brown is used to indicate the hills and valleys, whose elevations are shown by means of contour lines.

The topographic map is in effect an accurate relief model of the area mapped; there is no part of the area shown on the map whose altitude above sea level is not shown. It is a complete dictionary of altitudes for its entire area. The Survey's topographic map, taken as a whole, forming an atlas composed of thousands of sheets, is the detailed base map of the country, and when we consider that one of these sheets, the survey for which was made at a cost of $3,000 to $5,000, shows every physical feature of the area it covers, every streamlet and hill, every cross road and farm house in its exact relative position to all the other objects in the area, and that it is sold by the Government at the nominal price of 10 cents, many wonder that the Survey does not sell even more than the half million maps a year.

The area to be manped must first be located on the earth's surface geographically. This location involves the determination of the exact position in latitude and longitude, by astronomic methods of a point on or near the area to be mapped, from which the location of all the other points are determined. In addition the exact elevation above the sea of certain selected points must be ascertained. Such elevations are based on a system of instrumentally surveyed lines—tens of thousands of miles of them—run through the country and connected with sea level. These lines ramify throughout the United States and range in elevation from the lowest point in the United States, in Death Valley, which is 267 feet below the level of the sea, to the summit of Mount Whitney, 14,501 feet above sea level, the highest point in the United States south of Alaska.

30,000 BENCH-MARKS

The permanent records of work of this kind are left in the country mapped in the forms of bench-marks—plates giving the elevation of the particular spot marked to the nearest foot. These are the iron posts you see by the roadside, or the round tablet set in the corner stone of the county courthouse or in a bridge abutment. The Survey has set 30,000 of these bench-marks, which are used as starting points for various engineering works—by ranches in planning, fog, alkali, and lack of water. His work may ing a petroleum pipe line route, by the sanitary engineer in building a city sewer, and by the mine operator in figuring the tonnage of ore or fuel yet in the ground.

The topographer's work may at times lie in pleasant places, but more often he must contend with the wind that shakes his table, cold that numbs his fingers, mosquitoes, wasps, or other insects that make life miserable, with snakes, rain, hard climbs, lightning, fog, alkali, and lack of water. His work may lie in a pestilential swamp, in impenetrable brush, where laborious cutting is necessary, or in lifeless deserts.

Following the topographer comes the geologist, who observes and locates on the topographer's base map the distribution of the various kinds of rocks. The work of the geologist is widespread and extends into every State in the Union and into Alaska and Hawaii, and as a result of geologic explorations and investigations made by the Federal Survey, geologic maps representing thousands of square miles are published each year. This work is done by about 150 geologists. Of what use are these geologic maps?

you may ask. They are applied to many uses. Maps of areas that include pools of oil and gas show the lay of the rocks deep below the surface and the places where further drilling is most likely to result in producing wells. Maps of coal lands show what areas are underlain by coal, and many of them indicate the depth of the coal below the surface. Such a map is accompanied by a report which, if it covers a coal field, gives the data for determining the tonnage of coal within any part of the area covered. Some of these maps show not only where water-bearing formations outcrop, but how deep they lie below the surface and how far a man must drill to get water. Maps of many mining districts show the localities most favorable for prospecting for ore deposits.

Where the geologist leaves off, the mining engineer takes hold, and in examining and appraising a mineral property the mining engineer's first inquiry is for the map and report of the geologist. The same may be said of the constructing engineer, whose first inquiry usually is for the map showing the rock structure or the character of the foundation upon which he must build.

IMPORTANCE EXPLAINED

E. G. Woodruff also pointed out with great clearness the interest that should be taken in topographic maps by the mining engineer and the mine operator in general:

Few authors of treatises and papers on engineering subjects have given adequate attention to topographic maps. The statement applies especially to mining engineers in all branches. Topography, as suggested by the etymology of the world, means a detailed description of particular places. Written descriptions have been found less effective than the pictorial representations, therefore attempts have been made in various ways to picture the surface features of places. Lines and shading have been used, hachures drawn, and, finally, the contour topographic map. To a large extent this style of map is the result of the demands of engineers. It is designed to meet their needs far more than those of the man untrained in engineering. In fact, the average man obtains a better idea of the topography of an area from the hachure system than from contour maps. Since the maps have been made chiefly for the use of the engineer, they ought to meet his demands on the one hand, and, on the other, should be used by him to the fullest extent. Such maps, when properly made, accurately portray a portion of the earth's surface and should present the topography better than a personal examination of the area without a map could present it, because the person making such examination views only a limited portion of the surface at a time, and estimates distances only roughly with his eye.

Commonly, topographic maps are used as a general guide and accurate surveys are made subsequently as a basis for detailed work; but in many cases the second and more expensive survey is unnecessary, because the accurate location of points can be determined from data shown on topographic maps. In this work the map is used as a base and needed refinements can be added to it. It may be that the map available is drawn with 50-foot contours, whereas a 10-foot interval is required for the work in hand. If so, the map may be accepted and supplemental contours may be added.

THE CHIEF GEOGRAPHER

The topographic work of the Survey is under the immediate direction of the chief geographer. This position since 1908 has been held by Robert B. Marshall. Just at the present time Mr. Marshall is in the West inspecting the work being done in mining areas. As Mr. Marshall has been in charge of some very important pieces of work in the West, a word concerning his career will be of interest. He was born in Amelia County, Va. He was educated in the public schools at Richmond and at the George Washington University in this capital. He began work with the

ROBERT B. MARSHALL
Chief Geographer, U. S. Geological Survey.

Geological Survey March 16, 1889. His first work was as a field assistant in Colorado. He did work on maps covering Pikes Peak, Colorado Springs and other areas in that part of the State.

The following year, as a topographer, he had charge of a party which mapped the Two Buttes, Springfield and Albany quadrangles. The following year he was assigned to work in Montana. Among other maps, he made that of the Custer battle field.

In 1892 Mr. Marshall was assigned to California, where he directed the making of important maps at Yosemite, Banner Hill, Tamalpais, Palo Alto, San Jose, Mount Hamilton, Dardanelles, Haywards, Riverside, Mount Lyell, Santa Susana, Santa Barbara, Santa Paula, and other important quadrangles.

HEADS PACIFIC DIVISION

In 1893 Mr. Marshall was put in charge of all work in northern California. In 1902 he was given administrative charge of all work in California. The year following Oregon was added to his territory. In 1905 he was made geographer in charge of all work in California, Oregon and Nevada. May 1, 1907, he was appointed geographer in charge of the

Pacific division. This embraces the States of California, Oregon, Washington, Idaho, Utah, Arizona, and Nevada. January 23, 1908, he was made chief geographer in charge of the topographic branch, which position he still holds.

Mr. Marshall was a member of the Yosemite National Park Commission, created by the Secretary of the Interior for the purpose of changing the boundary of the park, as authorized by Congress.

The duties of inaugurating topographic service in the Hawaiian Islands was entrusted to Mr. Marshall in 1909. As chairman of the committee on the one-millionth-scale map he has done effective work. He was a delegate to the International Congress of Geographers held in Rome in 1912. President Wilson named Mr. Marshall as a member of the United States Geographic Board, appointed January 29, 1915. Mr. Marshall is a member of the American Society of Civil Engineers, the Association of American Geographers and other organizations.

GEOLOGISTS LOOK OVER SEVEN DEVILS COPPER DISTRICT

A number of mining engineers are looking over the copper deposits in the Seven Devils district of Idaho. Considerable interest in this region is being manifested, according to J. B. Umpleby, a geologist with the Geological Survey, who is making a study of the geological occurrence of ores in that portion of Idaho.

Strike Cuts Ohio Coal Output

Ohio's coal production in 1914 was nearly 19,000,000 tons. Its value at the mines was over $21,000,000. Owing to the strike which prevailed during a portion of the year, there was a decrease of nearly 50 per cent in the production as compared with 1913.

Compiles Rock Analyses

Analyses of rocks and minerals from the laboratory of the Geological Survey just have been compiled by F. W. Clark, the chief chemist of the Survey. This work covers representative analyses since the beginning of the Survey's work.

California Has Borax Monopoly

California had a monopoly in the production of borax in 1914, according to the Geological Survey. All borax produced in the United States came from three mines. They are situated in southern California. The larger part has come for many years from the Lila C., of the Pacific Coast Borax Co., in the mountains of the Death Valley region of Inyo County.

MISSISSIPPI ROCKS IN KENTUCKY TO BE SUBJECT OF STUDY

In an effort to settle a scientific controversy with regard to the correlation of Mississippian limestones, Charles Butts, a geologist of the Geological Survey, is making an extended study of this matter in central and western Kentuchy.

This work is an effort to correlate the subdivisions of Mississippian rocks surrounding the coal area in northern Kentucky and southern Illinois.

It is hoped that necessary data for the settlement of this question may be obtained within the next two months.

Mr. Butts will run a continuous geological section along the Ohio River bluff in the vicinity of Louisville, to the center of the coal fields. He also will examine a section southward from the Ohio River to central Kentucky, following some distinct stratum, if possible.

This work will necessitate extensive collections of fossils.

There is considerable obscurity in the identity of the lower carboniferous limestones in this portion of the Mississippi and Ohio Basins and its solution is of scientific importance.

Mr. Butts' work will be confined, mainly, to Meade and Breckenridge Counties, Kentucky. The Mammoth Cave in Kentucky occurs in these limestones, and the present study will include the Mammoth Cave region.

A MILLION WORKING DAYS LOST OWING TO STRIKES

Pennsylvania's bituminous coal production for 1914 amounted to practically 150,000,000 tons, according to the United States Geological Survey. The output was valued at $16,000,000 at the mines.

Over 1,000,000 working days were lost during the year on account of strikes. The average number of men employed in bituminous mines during the year was 184,201.

Indiana Produces More Petroleum

Despite predictions for many years that the oil wells of Indiana soon would be exhausted, the petroleum production of 1914 showed an increase of nearly 40 per cent over the output of 1913. This is the first increase shown since 1904.

The 1914 production was nearly 1,500,000 barrels.

"PERHAPS THE GREATEST ADVANTAGES OBTAINED FROM A CONVENTION OF MEN IN THE SAME INDUSTRY ARE THE INFORMAL CONFERENCES THAT TAKE PLACE BETWEEN INDIVIDUALS."

MINE TAXATION IN ARIZONA IS ENTIRELY IN HANDS OF STATE TAX COMMISSION

Last Session of Legislature Failed to Re-enact Old Law or to Provide a New One—Mines and Machinery Will Pay Thirty-eight and Three-tenths Per Cent. of State's Taxes in 1915

During the years 1913 and 1914 the producing mines of Arizona were valued for assessing purposes by adding together one-eighth of the gross production for the previous year, plus four times the net for the previous year, and the value of the improvements; this was the method as laid down by the State Legislature under a law enacted in May, 1913, and under the provisions thereof this basis of reckoning the valuations was only for the collection of taxes for the fiscal years ending June 30, 1914, and June 30, 1915.

The State Legislature met last January and was in session in regular and special meetings about 120 days. During that time it failed to enact the old law or pass any mine taxation law whatever, leaving the matter entirely in the hands of the State Tax Commission.

The State Tax Commission under date of July 16 gives the following method used by that body (Zander not participating) in appraising and valuing the producing mines of Arizona for the year 1915:

METHOD APPLIED

From a tax statement furnished by the Tax Commission, containing information compiled and furnished by the several companies the net income from mine operation was obtained for the years 1912, 1913, and 1914. Also the net income from other sources, directly and indirectly connected with the operation of the property in question (but not including any interest on investments or income from property or investments owned without the State of Arizona) was secured. This aggregate average net income was capitalized at 15 per cent. The "capitalized value" obtained by the use of this factor (15 per cent.) being the full value of all the property in the State of the company or corporation in question. The value of the "mining property" being the difference between the full value as found after deducting therefrom the "assessed value as found by the county assessor and reviewed and equalized by the County Board of Equalization" of all other property not "classed" as productive mines and mining claims.

LIMIT OPERATING EXPENSES

The net returns above referred to were accepted as returned by the several mining companies—save and except charges made for mine and plant depreciation and interest on indebtedness, which items were not allowed as an operating expense.

The factor of 15 per cent. was used on all mines in the class known and designated by the Commission as "copper mines."

The factor of 20 per cent. was used on all mines in the class known and designated by the Commission as "gold, silver, zinc and lead mines."

In case of some of the small producing mines where no net income was reported an arbitrary value was made by the Commission, based on all the information available and the "per-acre claim" basis used.

RETURNS OF LITTLE VALUE

A general reconciliation was observed at all times dependent upon the "physical condition" of the property being appraised, though it must be confessed that the information along this line submitted—save in two or three instances—was of but little value to the Commission, save perhaps as a future check, should a physical examination of the property become necessary. A further reconciliation was observed as between the appraisal made by the Commission and the 3-year average of the market value of such mining properties as are listed and dealt in by the public. The appraisal and assessment were in practically every instance much lower than the average market value.

During the year 1914 mines and machinery in Arizona paid directly 35.7 per cent. of all taxes, according to the figures of the State Board of Equalization.

Under the method adopted by the State Tax Commission for the year 1915 mines and machinery will pay 38.3 per cent. of all taxes.

"PERHAPS THE GREATEST ADVANTAGES OBTAINED FROM A CONVENTION OF MEN IN THE SAME INDUSTRY ARE THE INFORMAL CONFERENCES THAT TAKE PLACE BETWEEN INDIVIDUALS."

W. D. RYAN TELLS OF RESULTS FROM FIRST-AID TRAINING

Throughout the Middle West mine safety methods are going forward with leaps and bounds, according to W. D. Ryan, of the Mine Safety Committee of the Bureau of Mines. Mr. Ryan is stationed at Kansas City and has under his direct supervision the work done in that district.

Since May eighteen state first-aid contests have been held in Texas, Oklahoma, Arkansas, Missouri, Iowa, Montana, and Washington. Each of these was very successful and resulted in permanent organizations. These organizations have been found invaluable to keep up interest in first-aid and mine safety work.

It has not been many years since deaths often resulted from a simple fracture of the leg. Immediately after a man was hurt he was loaded into a mine car with all haste. To get the man out of the mine was considered the most important feature. As a result, oftentimes the fractured bone severed an artery and the patient bled to death from a comparatively minor injury. All this is prevented. Hundreds of miners who cannot speak English can adjust splints and apply bandages as cleverly as surgeons as a result of first-aid instruction. Nowadays when a leg is broken the patient is quickly extended on the floor of the mine and splints adjusted. He is removed from the mine as carefully as if in the hands of a trained hospital corps.

Deaths from ignorance and neglect have been reduced more than 50 per cent as a result of the educational campaign conducted by the Bureau of Mines. Half of the men who have been injured severely by electric currents are resuscitated.

In this way the long list of possible accidents can be gone over, showing the wonderful results from disseminating this class of education.

One of the most important effects of this work, Mr. Ryan declared, is generally overlooked. It is the reduction in the great number of accidents. There can be no figures covering accidents which might have happened. What is more, there is going to be a still less number of accidents in the future, he believes.

Mr. Ryan was called to Washington to consult with Director Manning, of the Bureau of Mines, and George S. Rice, chief mining engineer of the Bureau.

Chemists to Give Show

The National Exposition of Chemical Industries will be held in the New Central Palace in New York City the week of September 20. The exhibits will embrace American chemical products, apparatuses and processes, showing how intimately related to daily life are the chemical industries.

Working exhibits will be in continuous operation while the exposition hall is open.

ZINC IMPORTERS CONFER WITH TREASURY OFFICIALS

Satisfactory Agreement Reached for Appraising of Australian Ore Sent to This Country

At an informal conference held recently at the Treasury Department, in this city, between customs officers and a number of zinc importers, it was decided that the foreign market value of zinc ore, minus freight charges, duties and incidental expenses, is to serve as a uniform basis for customs appraisal in the United States.

The importers had filed protests against the varying basis of appraisal at different American ports. This was due to the different methods of arriving at the market value of imported ores. An agreement satisfactory to the importers and to the appraising officers was reached at the conference.

Large quantities of zinc formerly marketed in Belgium and Germany are finding their way to this country. Australia is a large producer of the zinc which was deprived of its European market.

The paragraph of the customs law covering the appraising of zinc ores reads as follows:

"The actual market value or wholesale price of any imported merchandise which is not actually sold or freely offered for sale in the open markets of the country of exportation shall not in any case be appraised at less than the wholesale price at which such similar imported merchandise is offered in the open market of the United States. Allowances are to be made for the cost of transportation, and other expenses from the point of shipment to the place of delivery."

A commission not exceeding 6 per cent may be deducted, 8 per cent may be deducted for profits, and not to exceed 8 per cent for general expenses.

The zinc importers who conferred with Andrew J. Peters, the Assistant Secretary of the Treasury, in charge of customs, are as follows:

W. H. Coolidge, Jr., American Lead & Smelting Co., 55 Congress Street, Boston, Mass.; Wm. Lanyon, Robert Lanyon Zinc & Acid Co., Hillsboro, Ill.; John Hughes, special agent United States Steel Corp., 71 Broadway, New York, N. Y.; H. S. Austin, assisant comptroller United States Steel Corp., 71 Broadway, New York, N. Y.; Ernest O. Jacobsen, National Zinc Co., 2 Stone Street, New York, N. Y.; S. S. Stevens, American Zinc & Lead Smelting Co., 55 Congress Street, Boston, Mass.; A. D. Beers, New Jersey Zinc Co., 55 Wall Street, New York, N. Y.; M. F. Chase, Mineral Point Zinc Co., 1111 Marquette Building, Chicago, Ill.; Wilfred Schade, Century Building, St. Louis, Mo.; H. W. Ackhoff, care of G. W. Sheldon & Co., Consumers Co. Building, Chicago, Ill.; H. W. Gepp, general manager Amalgamated Zinc, Ltd., of Australia, care of R. W. Cameron & Co., 23 South William Street, New York,

N. Y.; H. S. Kimball, president American Zinc & Lead Smelting Co., St. Louis, Mo., and A. S. McMillan, Edgar Zinc Co., St. Louis, Mo.

Labor Trouble Affects Production

Arkansas coal production in 1914 was close to 2,000,000 tons. Its value at the mine was over $3,000,000.

Considerable trouble between workmen and employers took place during the year, which interfered to a considerable extent with the output.

Cryolite Imports Increase

Cryolite, which is not produced in the United States, entered the country last year in increasing quantity. The imports came from Ivigtut, Greenland. The value of the imported product was $94,000,000.

Issues Report on Natural Gas

Chemical and physical properties of natural gas vary materially in composition throughout the United States, according to a technical paper on this subject which just has been issued by the Bureau of Mines. The authors are G. A. Burrell and G. G. Overfell.

Knopf in California.

Adolf Knopf, of the Geological Survey, left August 3 for California, where he will study the mining geology of the mother-lode district of California. He will specialize on a study of the mines in this region. They never have been studied in detail by the Government's experts.

Emmons Prepares New Report

W. H. Emmons is preparing a report on ore enrichment. This is an enlargement of his bulletin on sulphide enrichment which was published some time ago as Bulletin 529. It will be at least eight months before the new bulletin will be ready for distribution.

BURKINBINE MADE CONSULTING ENGINEER OF BUREAU OF MINES

J. L. W. Burkinbine, of Philadelphia, has been appointed a consulting engineer of the Bureau of Mines. Mr. Burkinbine is a son of the late John Burkinbine, who also was a consulting engineer on the staff of the Bureau. Mr. Burkinbine will continue the research work carried on for many years by his father.

PLANS COMPLETED FOR NATIONAL FIRST-AID CONTESTS AT FAIR

First-aid and mine safety work for the fall and winter have been outlined after a conference between Van H. Manning, Director of the Bureau of Mines, and George S. Rice, chief engineer of the Bureau.

There has been some rearrangement of the schedule of the eight mine rescue cars which are maintained by the Government. Steps have been taken to make more effective the personnel at the five stations maintained in the different mining regions.

At this conference, which was held in Washington, final arrangements were completed for the national first-aid contest which will take place in San Francisco September 23 and 24. Seventeen States will be represented by their teams, which were selected as a result of State contests.

Arrangements have been made for the erection of a chamber of coal dust explosion demonstrations. Some of the miners who will compete in the first-aid contest will use artificial breathing apparatus and do their work under the conditions of an actual explosion.

Through the kindness of the Pacific Coast Tank & Pipe Co., a wooden pipe, 6 feet in diameter and 120 feet long, has been supplied. This will give an ideal place to exhibit explosions of coal dust.

Metal Reports Completed

All the metal reports which go to make up the annual volume of mineral resources have been finished. Most of them already have been published in separate pamphlet form. Bound volumes containing all the metal and non-metal reports will be issued later in the year.

LIFE-SIZE PICTURE OF LATE DR. HOLMES HUNG IN BUREAU

A life-size picture of the late Dr. Joseph A. Holmes, director of the Bureau of Mines, has been hung in the directors' room at the Bureau in this city. The picture was purchased by the employes of the Bureau.

Produces 1,247 Tons of Asbestos

In 1914 asbestos production of the United States was 1,247 tons. Its value was $16,810.

CAN ANY MAN TRYING TO KEEP ABREAST WITH THE PROGRESS BEING MADE IN HIS INDUSTRY AFFORD TO MISS THE ASSEMBLAGE OF MINING MEN IN SAN FRANCISCO THE WEEK OF SEPTEMBER 20?

THINKS LOUISIANA SULPHUR WILL NOT REPLACE PYRITES

During 1914 sulphur to the value of $5,954,236 was marketed in the United States. This exceeded the value of the product marketed in 1913 by $474,387. Statistics of actual production are not available, due to the fact that there is some objection to giving out the amount of stock on hand.

The value of the sulphur mined in the United States has risen from $21,000 in 1880 to the present figure. In only one year was the 1914 output exceeded. This was in 1908, when the value of sulphur sold at American mines reached $6,668,215. As usual by far the greatest part of the sulphur came from the mines of the Union Sulphur Co., in Louisiana.

Some discussion has arisen of late as to the use of American sulphur to displace pyrites. Despite the fact that some claim this would be possible if the price of American sulphur could be reduced to $15 a ton, a very competent authority takes an opposite view. In a communication to the MINING CONGRESS JOURNAL, he says:

"I do not see how it would be possible for Louisiana sulphur to displace pyrites, except as you suggest in the manufacture of fuming sulphuric acid; even in this line and at $15 per ton I doubt its economy.

"The sulphur producers cannot sell brimstone at one price to the acid maker and another price to the paper people who must use this article. We use in this country something over 1,000,000 tons of pyrites, which would mean about 500,000 tons of sulphur, so that if all of this pyrites business were substituted by brimstone it would only about double the consumption of the Louisiana product and much more than cut in half their profit per ton. You must also remember that most pyrites carries copper and other by-products which, to be taken out, must yield the sulphur for some purpose and the miners of this ore would not allow their outlet to be cut off by the sulphur producers in this country, even if they had to sell it at sulphur cost. All of the plants for ordinary acid making are equipped for pyrites and not brimstone so that an enormous investment would become obsolete and would have to be taken care of by sulphur producers, if they wish to substitute their material. I cannot see how any manufacturer could expect the Louisiana sulphur people to break their whole business in this way.

"All pyrites carrying copper, as most of it does, must look to the acid maker for an outlet and it can be sold at a price that would not justify the brimstone makers to compete with and thereby break the market in their regular lines."

PHOSPHATE BEDS IN BIG HORN MOUNTAINS ARE CLASSIFIED

Important investigations of phosphate in the Big Horn and Owl Creek Mountains of Wyoming, just have been concluded by D. Dale Condit, an associate geologist of the Geological Survey.

Mr. Condit's field work covered the south end of the Big Horn Mountains, and their southwestern extension in the Owl Creek Mountains. He examined the supposed phosphate lands said to extend throughout these ranges for the purpose of classifying the public lands.

Phosphates never have been mined either in the Owl Creek Mountains or in the Wind River mountains.

On this trip Mr. Condit traversed Glacier National Park and the Grand Canyon. He reports that there are more tourists visiting these scenic wonders than ever before.

Lake Superior Miners Meet

The twentieth annual meeting of the Lake Superior Mining Institute will be held at Ironwood, Mich., September 6–9. The first-aid demonstration will be held at Ironwood, after which excursions are planned to various points of interest. One day is to be spent on the Cuyuna Range. This will include a visit to the Minnesota School of Mines in the State fair. Business sessions will be held at Ironwood and Crosby, Minn.

Phalen to Deliver Address

"Conservation of Phosphate Rock" is to be the subject of the paper to be delivered before the Pan American Scientific Congress, by W. C. Phalen, of the Geological Survey.

Correlates Tertiary Flows

Important work in correlating tertiary flows and sediments of the middle and south fork of the John Day River, in eastern Oregon, just has been completed by D. F. Hewett of the Geological Survey.

Statistics near Completion

Work is nearing completion at the Bureau of Mines on statistics for metal mine accidents in 1914; quarry accidents for the same year, and accidents in metallurgical plants during 1913 and 1914.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR."

Recent Legal Decisions

MINING LEASE

The lease of a tract of land for the sole purpose of prospecting for mining coal and asphalt was on the condition that the lessee should occupy only so much of the surface land as might be reasonably necessary to carry on the work of prospecting, mining, storing, and removing the coal and asphalt mined; the lessee covenanted to commit no waste and to suffer no waste to be committed on the premises and not to use the premises for any other purpose than that authorized by the lease, nor suffer or permit them to be used for any other purpose and stipulating to pay a certain royalty on all coal and asphalt mined. Under the covenants of such a lease a lessee cannot, after sinking shafts upon the premises and extending tunnels into adjacent lands and mining and removing large quantities of coal through such tunnels and shafts. dump large quantities of shale and waste brought from such adjacent land upon the surface of the leased premises; nor can he use a large part of such surface with buildings and dwellings for the use of miners engaged in such outside mining operations; equity will prevent by injunction such use of the surface or the leased premises in violation of the covenants of the lease.

Sharum *v.* Whitehead Coal Co., 223 Federal, 282.

ENJOINING OPERATIONS

An injunction issued at the suit of a landowner enjoining a railroad company from boring oil wells on its right of way extending through the land of the complainant, on the ground that such boring and operating is a trespass and a disturbance of the oil under the land of the complainant adjacent to the right of way, may be dissolved on the execution of a proper bond of the railroad company, conditioned for the payment of all damages sustained by the complainant if a final judgment should be rendered in his favor.

Natalie Oil Co. *v.* Louisiana Ry. & Nav. Co., 137 La.—69 Southern, 146.

ROYALTIES ON OIL

Where a lease of lands for oil and gas provided that a certain sum shall be paid each year as a royalty on the gas produced from each well and marketed off the premises, and the lessee operates the lease, markets gas from wells thereon for a part of the year, and thereafter assigns the lease, the assignee, in the absence of a special contract, is not liable for royalties accruing on such wells, the product of which was marketed from the premises before the lease was so assigned, regardless as of the particular date when such royalties became due and payable; but the original lessee alone is liable for the royalties accruing during the time he operated the wells and marketed the products.

Columbus Gas & Fuel Co. *v.* Knox County Oil & Gas Co. (Ohio), 109 Northeastern, 529.

OPERATOR'S LIABILITY

A complaint in an action for the death of a miner is sufficient where it avers that the deceased was ordered by the mine boss and his assistant to repair the entry in a particular manner and that the manner so selected was dangerous and known to be so, but the mine boss and his assistant nevertheless negligently selected such unsafe ways of operating when they could have selected a safe way of taking down loose slate and rock; and further averring that the deceased miner was bound to obey the orders of the mine boss and his assistant, and while attempting to perform the work in obedience to such orders, the loose slate fell on him and killed him. The statute of the State, regarding the duties of a mine boss, recognizes two ways of making such places safe, one by propping the roof at the dangerous place and the other by removing the loose stone or slate, and if the mining boss and his assistant negligently selected the unsafe way and ordered the miner to perform the work in that particular manner, and he was killed while obeying such orders the mine operator is liable.

Vandalia Coal Co. *v.* Alsopp. (Ind. App.) 109 Northeastern 421.

ASSIGNMENT OF INTEREST

Where the owner of an oil lease assigned one-half interest thereof to another person upon the consideration that the latter should bear all the expense of drilling, equipping and operating the oil wells to be drilled upon the premises; and thereafter such assignee assigned to a third person three-fourths of his intereest in the oil lease upon the consideration that such last assignee should bear the entire expense of development of the lease, and covenanted to carry out the contract between the original lease and the first assignee; and thereafter such second assignee assigned a one-eighth interest in the lease to a fourth person, conditioned that such assignment should be binding upon the parties and was made subject to the terms and conditions of the lease as originally executed by the lessee,

such third and last assignee becomes liable to pay only one-eighth of the expense of drilling, equipping, and operating the lease and the wells drilled.

Cox *v.* Butts (Oklahoma), 149 Pacific 1090.

LOCATION ON ABANDONED GROUND

Where all of the rights of an original locator of a mining claim have been abandoned or forfeited and no claim of right is asserted by such original locator, his heirs, assignees or legal representatives, and the contesting parties concede that all rights that ever existed by reason of such prior location ceased to exist before any relocation of the ground was attempted, then the land was open to relocation, and was in fact open, unappropriated, public mineral land, open to location in the same manner as if it had never been located, and a subsequent location thereof made as an original location is required to be made, is effective as such, and the validity of such location cannot be questioned except for the same reasons that a location upon ground that had theretofore never been the subject of a location, can be questioned. In such case the locators are not required to state if the whole or any part of the ground was located as abandoned property because he was not in effect locating the ground as abandoned property but was locating it in the same manner as other public mineral ground is located.

Copper Queen Consolidated Mining Co. *v.* Stratton. (Arizona) 149 Pacific 389.

Ellamar Copper Report Finished

A report on the Ellamar copper district of Alaska has been completed and will be ready for distribution soon. It is by S. R. Capps and B. L. Johnson.

OKLAHOMA MINERS APPEAL FOR HEALTH SURVEY

Efforts are being made by mine operators in both the zinc and coal regions of Oklahoma to secure a health survey at their mines. This work is being conducted jointly by the Bureau of Mines and the United States Public Health Service at the mines in Missouri and Colorado.

Mines 72,000,000 Tons of Coal

West Virginia broke her own record of coal production during 1914. The State ranks second among the coal producers.

The production for 1914 was nearly 72,000,000 tons.

AMERICA'S MOST REPRESENTATIVE MINE OPERATORS WILL ASSEMBLE AT SAN FRANCISCO SEPTEMBER 20-22.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR."

MINING COLLEGE FIRST-AID TEAMS ALLOWED TO COMPETE

In view of the great interest manifested by first-aid teams from mining colleges in the third annual joint field meet, to be held by the United States Bureau of Mines, the American Mine Safety Association, and the California Metal Producers' Association in San Francisco, September 23 and 24, the rules committee has withdrawn the restrictions against the participation of such teams in the meet.

The ruling previously made that only teams from bona fide mining, smelting and milling operations should be admitted to the interstate contests of September 24, thereby restricting teams from mining colleges to participation in the demonstrations of September 23, has been modified to provide that such teams and teams from State departments or other institutions interested in safety in mining, but not concerned in mine operation, may compete among themselves on the twenty-fourth for a special price for the most proficient team from an educational institution.

It is hoped that a special prize or cup may be offered as an award to the team winning in this special competition. It is believed that this modification of the rules governing the meet will result in the sending of a good number of teams from the various colleges and universities in the West.

Push Work on Phosphate Map

G. R. Mansfield, a geologist of the Geological Survey, has returned to Washington after two months' work upon the Montpelier, Idaho, and Wayan, Wyoming, quadrangles. These quadrangles represent a considerable portion of the western phosphate field. Owing to the increasing importance of potash, work is being pushed to complete the quadrangles.

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Recent Patents of Interest to Mining

Composition of matter and process of producing it, No. 1,129,109. This invention is by Frank Meyer, of Ouray, Colo.

Mr. Meyer states that the primary object of his invention is to produce an improved fuel in the form of artificially prepared blocks, commonly known as briquets.

Introducing this fuel he uses coal and coke dust, together with a binding agent, which consists of an extract of cactus in liquid form. This extract is obtained by tapping live cactus plants or by treating the crushed plant with boiling water. The cactus liquid presents an advantage over many binders in that it is in itself combustible as well as adhesive. Another feature claimed for the cactus binder is that the briquet is much less brittle than when other adhesive substances are used. The low cost at which cactus plants are obtainable throughout extensive sections of United States and Mexico is a further recommendation for its use as a binder.

In addition to being serviceable in the manufacture of briquets from coal or coke dust it is pointed out that the cactus juice also may be used effectively to form bricks of concentrates for smelting purposes. Other combustibles such as sawdust can be treated in the same manner.

USES SULPHUROUS GASES

Process for the recovery of metals from ores, No. 1,146,373. This invention is by Charles S. Vadner, of Salt Lake City, Utah.

Mr. Vadner claims to have devised a means for recovering iron and other metals from slag and to have found a means of utilizing the sulphurous gases as produced in smelting operations.

In discussing his invention, Mr. Vadner calls attention to the considerable amount of metals which are lost in slag. He also points out that enormous quantities of copper, iron, and other metals cannot be mined owing to the small amount of metallic content in the ore. With his process he expects to treat slag dumps and low-grade iron and copper deposits.

The processes by which it is intended to accomplish these purposes are highly complicated but in general the mineral matter is treated with smelter fumes containing sulphurous gases, in the presence of a solution containing at least one of the common chlorides leaching out the metals from the mineral matter, eliminating excess SO_2 gas by suitable means, passing the air through the solution, thereby precipitating iron and making possible its recovery.

PATENTS SCREEN ARRANGEMENT

Ore concentrator, No. 1,146,211. This invention is by Fritz O. Stromborg, of Salt Lake City, Utah. Mr. Stromborg's invention relates particularly to concentrators employing a plurality of screens mounted within a tank of water.

The primary object is to provide a simple and efficient means for supporting the screens so as to allow a certical and longitudinal oscillating movement.

The secondary object is to impart a rather rapid movement to the screens when moved in one direction and for reducing the rate of speed when moved in an opposite direction.

The invention is a combination of a water tank, a crank shaft suitably mounted, a frame work, hanger bars, bars connecting the hanger bars forming a rigid frame depending into the tank; screens adjustably mounted and means for imparting movement to the frame.

MAKES GRADUAL SEPARATION

Magnetic separation of ore, No. 1,146,140. This invention is by Francis B. Dutton and Benjamin McKechnie, of Labanon, Pa. They have assigned their invention to the Pennsylvania Steel Co. The inventors claim to have devised an improved method of separating magnetic iron ore from material of a non-magnetic nature.

The desired results are obtained by causing the magnetic iron ore when in a powdered state to be acted upon by magnets. It is preferable to have the powdered ore suspended in water or other suitable fluid container. The action of the magnets must be gradual, which separates the particles according to their magnetic quality, that is, the purest particles are first separated. The method provides for bringing the mass gradually into the field of a number of magnets of substantially the same strength. The particles are removed as they are separated.

The apparatus for carrying out this method apparently is simple and convenient.

REUSES IRON

Process of treating zinc-bearing materials, No. 1,146,075. This invention is by Woolsey McA. Johnson, of Hartford, Conn. He has assigned the invention to the Continuous Zinc Furnace Co., of Hartford, Conn.

Mr. Johnson claims that he has devised a process relating particularly to the recovery of zinc either as metal or in the form of oxide from silicate slags, such as result from the smelting of lead ores and from the reduction of certain ores containing zinc and copper. Such slags are subjected to the reducing action

of iron in an electric furnace under proper conditions to volatilize the zinc. The results in slag are subjected to a reducing operation to separate a portion of the iron in the form of metal.

The inventor cleaims to have a cyclical process of treating a charge of zinc-bearing material low in sulphur and containing silicate whereby iron is recovered and in which the reduced iron is utilized to reduce further quantities of zinc-bearing material.

REQUIRES SPECIAL SOLUTION

Composition in process for extracting metals from their ores, No. 1,145,954. This invention is by James F. Williams, of San Francisco. He claims to have a process peculiarly adapted to the freeing of gold, silver, and platinum from cilicious ores and placer sands.

The ore is first pulverized and screened. The pulverized ore is allowed to stand for hours in a special solution. The ore is run over amalgam plates.

One of the important features of the invention is the formula for the solution. It is prepared in two parts. One ounce of concentrated sulphuric acid is mixed thoroughly with 16 ounces of water to form the first part of the bath. Forty grains of potassium bromide is dissolved in 2 ounces of water to make the second part. The potassium promide solution then is added to the acid solution. This solution may be diluted with water to attain the proper strength for its specific use.

LAMP DOES NOT WIGGLE

Miner's lamp attachment, No. 1,148,889. This invention is by Frank A. Casteel, of Washington, D. C., and Robert M. Mayfield, of Kingwood, W. Va.

Owing to the fact that the means usually employed for attaching miner's lamps to the hat or cap admits of annoying play, an effort has been made to avoid this objection. The inventors claim they have avoided any looseness in attaching the lamp, while their device admits of the removal of the lamp with the greatest facility. The invention consists of a joint and bracket so constructed as to preclude any possibility of the swaying of the lamp.

CHANGES FEED AND GUIDE

Mining machine, No. 1,149,110. This invention is by Albert Vall, of Claremont, N. H. He has assigned his invention to the Sullivan Machinery Co., of Boston.

The inventor claims that he has devised a machine fitted with improved means for feeding and guiding it while performing the cutting operation.

MINIMIZES SLAG TROUBLE

Metallurgy of copper, No. 1,148,814. This invention is by Lawrence Addicks, of Perth Amboy, N. J., and Clarence L. Brower, of Chroame, N. J.

The inventors claim to have devised a process especially useful in the refining and melting of copper. An expedient is offered to prevent the failure of silicious walls or bottom of a furnace. This is a result, it is pointed out, of inability to control the extent of erosion or slagging of silicious material. The inventors propose the refining of nearly pure copper by simple melting under non-reducing conditions and in the presence of only sufficient acid material to slag off the small proportion of impurities contained, while minimizing the formation of slag by avoiding contact with acid lining material, and subsequently poling out the small proportion of cuprous oxide incidentally formed.

Rock Drill No. 1,148,760. This invention is by Clarence A. Dawley, of Plainfield, N. J. He has assigned his invention to the Ingersoll Rand Co. The object of the invention is to provide a pulsatory drill of high efficiency combined with lightness and portability. Mr. Dawley makes the following claim for his drill:

"The combination with a pulsatory tool having a cylinder and piston, of a pulsator having a cylinder and piston, one end of said pulsator cylinder being connected by a fluid conduit to one end of the tool cylinder. and the other end of said pulsator cylinder being connected to the other end of the tool cylinder, and passages joining the ends of the pulsator cylinder at each end of the pulsator piston stroke to equalize the pressures therein.

"The combination with a pulsatory tool having a cylinder and piston, of a pulsator having a cylinder and piston, one end of said pulsator cylinder being connected by a fluid conduit to one end of the tool cylinder, and the other end of said pulsator cylinder being connected to the other end of the tool cylinder, and passages bridging the pulsator piston and connecting the ends of the pulsator cylinder at each end of the pulsator piston stroke."

WILL NOT RUST

Process of smelting iron ore No. 1,148,700. This invention is by Florentine J. Machalske of Plattsburg, N. Y. He has assigned his invention to The American Ferroletride Corporation of Plattsburg, N. Y. The invention relates to a new process of reducing iron ore and has for its object a process for producing a high-grade iron almost free from carbon, phosphorus, titanium, silicon, and manganese. It is also the intention to produce an iron which is very ductile and contains substantially no occluded gases. Mr. Machalske claims that the product takes a high polish and resists rust. He claims that the process is particularly useful in treating iron ores of the Adirondack region of New York. Further claims for the invention are:

"1. The improvement in the process of electrically reducing iron ore which comprises forming a basic charge composed of iron ore, graphite and a basic flux, subjecting this charge to an electric current and

maintaining the charge basic during the entire reducing process, the graphite being substantially equal to the amount of carbon theoretically required.

"2. The improvement in the process of electrically reducing iron ore which comprises forming a basic charge composed of iron ore containing titanium, and artificial graphite and a basic flux, subjecting this charge to an electric current and maintaining the charge basic during the entire reducing process, the graphite being substantially equal to the amount of carbon theoretically required.

"3. The process of electrically reducing iron ore which comprises forming a basic charge composed of iron ore containing phosphorus, and artificial graphite and a basic flux, subjecting the same to an electric current and maintaining the charge basic during the entire reducing operation, the graphite being substantially equal to the amount of carbon theoretically required.

"4. The improvement in the process of electrically reducing iron ore, which comprises forming a basic charge composed of iron ore containing manganese, and graphite and a lime flux, subjecting this charge to an electric current, and maintaining the same basic during the entire reducing process, the graphite being substantially equal to the amount of carbon theoretically required.

"5. The improvement in the process of electrically reducing iron ore which comprises forming a basic charge composed of 100 parts iron ore, 14 parts artificial graphite, and a basic flux, subjecting this charge to an electric current and maintaining the charge basic during the entire reducing process."

Other patents granted were:

No. 1,149,215 to C. O. Palmer, of Cleveland, Ohio, mining machine; No. 1,149,264, to W. H. Hubbard, of Salida, Colo., cooling ore, assignor to the Ohio & Colorado Smelting Refining Co., Denver, Colo; No. 1,149,302, to J. Stanley, of Geary, Okla., dry and wet ore separator; No. 1,149,463, to F. Pardee, of Hazleton, Pa., apparatus for separating coal ore etc.; No. 1,149,495, G. C. Carson, Denver, Colo., metallurgical furnace; No. 1,149,502, C. E. Davis, Chicago, Ill., mining machine; No. 1,149,503, assignor to The Goodman Mfg. Co., Chicago, Ill.; No. 1,149,754, J. Harris, Sheffield, Eng., mechanical ore roasting and like furnace; No. 1,150,263, M. C. Godbe, Salt Lake City, Utah, ore leaching apparatus; No. 1,150,367, W. A. Hoffman, Hazleton, Pa., apparatus for treating ores; No. 1,150 669, J. A. Fleming, Globe, Ariz., Device for treating ores; No. 1,150,819, S. Galli, Mulbury, Kans., automatic releasing device for cars upon mining cages; No. 1,150,841, H. L. Doherty, New York City, method of smelting sulphid ores.

STUDY OF TINTIC DISTRICT, UTAH, IS BROUGHT UP TO DATE

Work just is being completed upon a report on the geology and ore deposits of the Tintic district of Utah. It is by Waldemer Lindgren and G. F. Loughlin.

This is an exhaustive technical report covering this important mining region, which produces gold, silver, copper, lead, zinc and bismuth.

It is the first report which has been issued upon this district since 1897 when Dr. George Otis Smith and G. W. Tower presented a similar paper.

Development in the mines of the district since that time has been very extensive, and the need for a further detailed examination has been apparent for some time.

The bismuth in this district has been developed recently. It is thought to have potential commercial value.

BUREAU OF MINES PREPARES BIG STATISTICAL VOLUME

What will be the most pretentious compilation of coal mine accident statistics ever issued by the Bureau of Mines will be published before the close of the year.

In one volume 150 tables dealing with fatalities in coal mines in the United States from 1870 to date, will be given. The information will be classified as to cause, calendar year and by States. The tables also will show the total number of mining machines in use, production, number of men employed, fatalities based upon the number of men employed, and fatalities per million tons of coal mined.

Every State will have production and fatality tables from the beginning of its inspection service to date. Many tables will be illustrated by charts.

This work is under the direct supervision of A. H. Fay, the Bureau of Mines Statistician. Mr. Fay has given this particular set of tables a great deal of study and expended upon them much hard work. He believes that they will be instructive in the prevention of accidents in mining.

Virginia Leads in Pyrite

Virginia leads other States in the Union in the production and value of pyrite. The production in this State amounted to $336,662 tons in 1914, according to W. C. Phalen, of the Geological Survey. There is an increasing production of pyrite coming from New York, California, Illinois and Georgia. Wisconsin, Ohio and Missouri also are producers. Despite the domestic production, imports of pyrites during 1914 amounted to more than 1,000,000 tons.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR.

Two Members of a Bureau of Mines Rescue Team Showing New Style of Helmet.

GEOLOGICAL SURVEY PLANS LONG-NEEDED REFERENCE WORK

The Geological Survey is about to publish, under the title of "Lexicon of Stratigraphic Nomenclature of North America," a work for which there has been great need.

It is to be a lexicon of geologic names of all rock divisions, both sedimentary and igneous, in the United States, Canada and Mexico. They will be arranged alphabetically to conform in general to the plan of the proposed international stratigraphic lexicon.

Under each name, with exception noted below, the following data are to be given:

1. Age and geographic distribution.
2. Date of definition, with author's name and reference to publication.
3. Classification and limits, as originally defined, with statement of lithology and thickness.
4. Present definition, if still in use, and name that replaces it, if abandoned.

The information concerning formations outside of the United States will be limited to Nos. 1, 2, and the first part of 3.

Names approved by United States Geological Survey, names not acted on, and names abandoned by United States Geological Survey are to be indicated by distinctive type or otherwise.

ADDITIONAL DUTY ON ANTIMONY IS SUSTAINED

The protest of G. W. Sheldon & Co., of New York, against additional duty on antimony has been overruled by the Board of General Appraisers. General Appraiser Fischer in his ruling in this case says, in part:

"On an importation of a quantity of antimony while the tariff act of 1909 was in force the entered value was advanced 20 per cent by the appraiser, from whose action the importers took no appeal. The merchandise, however, was not withdrawn for consumption until after the passage of the present tariff act. Under the provisions of the act in effect on the date of importation, the advance then made imposed no penalty on the importers, as their goods were then subject to a specific rate of duty, but under the present act, which was in force at the time of the withdrawal, the goods were subject to an ad valorem rate of duty, and if imported thereunder would undoubtedly, as conceded by the importers, be liable to a penalty of 1 per cent for each 1 per cent advance.

"In the light of these facts, the importers contend that no penalty can be legally imposed by reason of the advance made by the appraiser at the time of importation when no penalty attached thereto under the then existing law, and that to penalize the importation now would in effect be a retroactive and consequently an illegal act.

"For the reasons set forth we overrule the protest and affirm the decision of the collector."

DIFFUSION OF METALS WHEN IN CONTACT SUBJECT OF REPORT

A preliminary report by C. E. Orstrand and F. H. Dewey has been submitted for publication to the Geological Survey. This report contains some of the first results reached in a series of experiments dealing with the diffusion of two metals when placed in contact. It will describe the movements of gold into lead and lead into gold when polished surfaces of the two metals are kept in contact at ordinary temperatures.

A number of metals are now in process of being tested. The deductions which may be drawn are expected to be of economic importance. The report will not be issued for six months.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR."

INTERIOR DEPARMENT ACHIEVES IMPORTANT RESULTS IN OIL FIELDS

Van H. Manning, New Director of Bureau of Mines, Tells of Great Saving of Oil and Gas Which Has Been Made in Oklahoma—Prevention of Waste Difficult in Old Fields

Millions of cubic feet of natural gas and millions of gallons of oil have been wasted in the development of the oil and gas fields of the United States. When the Bureau of Mines was established in the Department of the Interior this enormous loss of resources had been recognized, but the Bureau was able to do little more than to call attention to it, because of a lack of funds for investigations. The need of adequate provision for systematic study of the problem was brought to the attention of Congress, which at its last session made an appropriation sufficient to enable the Bureau to organize a petroleum division in charge of W. A. Williams, chief petroleum technologist, and to begin investigative and educational work looking to an annual saving of oil and gas worth millions of dollars.

Congress also provided for the inspection and investigation of oil and gas wells on Indian reservations, a work which is being done in cooperation with the Indian Office of the Interior Department.

The bulk of the work of the new division of the Bureau of Mines is in the newer fields in Oklahoma and California. In the former State the Bureau of Mines employs inspectors to oversee drilling operations on Indian lands in order to insure the use of safe methods of drilling and closing wells and to prevent waste of oil and gas.

In regard to the general progress of this highly important work, Van H. Manning, the new director of the Bureau of Mines, makes this statement:

GOOD RESULTS EVIDENT

"Decided improvement has resulted from the work being conducted by the Bureau of Mines in the Oklahoma fields. Judging from a report I have just received I would say that it must be recognized that when considerable development has taken place in any oil or gas field, it is usually impracticable, and often impossible to do more toward preventing waste than to delay for a little the ultimate exhaustion of the wells. In Oklahoma there is a very large acreage of prospective oil and gas land, and ultimately many more fields will be discovered. So far as the conservation of gas is concerned, it is my belief that the plans of this office should be devoted more towards preventing waste in fields yet undiscovered than in fields now developed. In the latter most of the gas has already escaped and the amount of gas recoverable by the most stringent enforcement of remedies would not warrant the cost of applying them. The average life of gas wells in Oklahoma, even when every effort is made to save the gas, is three years, and about half the gas is produced in the first year. Evidently the bulk of the gas escapes early in the life of an oil field and oil fields are developed regardless of the market for gas.

"However, I do not intend to convey the idea that it is not the intention to investigate thoroughly the older fields and to make every practicable effort to lessen waste of oil and gas therein. Moreover, investigation in the older fields will show how gas that accompanies oil may be best utilized, how the invasion of oil sands by water may be prevented or delayed, and how a larger percentage of the oil in the ground may be recovered.

ENGINEER'S RECOMMENDATIONS

"The Bureau's engineers have reached the following conclusions as to the conditions that must be considered in attempts to prevent or minimize loss of oil or gas in the Oklahoma fields:

"1. That practically all sands or other porous strata contain either oil, gas or water wherever penetrated by a well, and that oil, gas and water are closely interrelated in each field.

"2. That because all these substances are fluid and mobile, it is essential, in permanently preventing waste, to consider each deposit of oil or gas as a unit, and consequently, nothing can be accomplished by trying to remedy the conditions and prescribing methods to be used on any one property.

"3. That underground waste is more important and far more difficult to detect and to remedy than surface waste.

"4. That as Government leases are scattered throughout each field, little good can be accomplished by correcting, on departmental leases, conditions which are allowed to continue on adjoining properties over which the Government has no control. Therefore, cooperation with State authorities should be part of the Government's work under the Secretary of the Interior.

"5. That, because it will be impossible for the small force of oil and gas inspectors working under the direction of the Bureau of Mines and the Indian Office to supervise all well drilling on Indian lands, it is necessary to have the cooperation of the operators themselves which can be gained partly by supervision but principally by educational work.

"6. That little can be done in conserving the gas and permanently preventing underground waste in fields which are well developed, because the cost of changing existing conditions would usually be prohibitive, and much of the damage is irreparable.

"7. That effective conservation of gas is intimately related to the price of gas and to marketing conditions.

"Well logs, geological sections and diagrams showing conditions in the field have been prepared for the purpose of studying underground conditions, and for distribution among producers, in order to call their attention to defective methods of operating. Many diagrams have been distributed among the operators, and many requests for more have been received. It has been found that diagrams are much more convincing than anything written or spoken. They reach more operators, and their effects are wider.

STATE PROVIDES LAWS

"During the last year, the State enacted laws that empower the State corporation commission to regulate drilling for oil and gas, and at present the commission is considering measures that, it is hoped, will provide means for improving the methods on commercial lands. A conservation officer has been appointed by the commission, and regulations are to be issued.

"Probably the most important single feature of the work undertaken in Oklahoma is cooperation with the operator himself. It is absolutely impossible for the small force of Government inspectors to check up all the reports rendered by the departmental lessees, and to supervise all operations. Furthermore, the interests of the lessor and lessee are mostly in common, since both derive their profits from the amount of oil and gas brought to the surface and marketed. The greatest good can be gained by convincing the operator that certain methods will decrease the quantity of oil and gas which can be marketed, and others will increase it, and that the latter can be employed with a profit to himself. The work should be directed to the end that the operator will gain confidence in the Government inspectors and will consult them and keep them fully informed of conditions; and the inspectors, on the other hand, should act as a clearing house of information on operating methods, giving the operators the full benefit of the results of their investigations and those of the Bureau of Mines.

"There are three classes of waste in the oil fields. Probably the most important is the waste of gas; the waste of oil ranks second, and the waste of fresh water ranks third.

WASTE OF OIL

"In general the operator endeavors to prevent waste of oil to the best of his ability since oil is his principal source of profit, but through inefficient methods, carelessness, or lack of cooperation with his neighbors, deposits are not protected and much oil is left underground which might have been recovered by better operating methods. The chief causes of this waste are unnecessary infiltration of water into oil sands, preventing the maximum amount of oil being extracted; the fact that during periods of low prices or during boom conditions the operators will neglect sands of relatively small production, and leave them unprotected; allowing oil to enter sands that previously contained no oil, and abandoning wells prematurely.

"I believe that the operators, once they are shown and convinced of the importance of this waste, will agree to preventive methods, especially if these can be had through associations, or through an authority like the Bureau of Mines, or through the State corporation commission, in order that all operators in the field shall adopt the same methods. This phase of waste is of very great importance and has been subjected to considerable investigation. It will require the compilation of a great amount of data throughout all the fields of the five civilized tribes to solve all the problems involved.

"Two processes which will affect the interests of the lessors have been coming into use in recent years. These are the extraction of gas and oil from oil sands with vacuum or suction pumps, and the so-called Marietta process which forces air under considerable pressure into some wells in order to drive the oil through the sands into other wells, to be extracted therefrom. In the first case the oil is drawn toward the wells to which the vacuum pumps are attached, and in the other case the oil is forced away from the wells into which the air is introduced. Operators then can suck or force the oil away from the lessor's properties. The vacuum process is being used in the oldest fields. I am informed that the so-called Marietta process has recently been introduced, and is being used, in the Chelsea pool, and, that the lessor of a departmental lease has an injunction in court to prevent its use in the manner desired by the operator. Both methods increase the total recovery of oil from the pool, and, if regulated, will work to the lessor's benefit. These methods are now under investigation.

"Investigations will be conducted with the view of increasing the recoverable percentage of oil and gas and of using methods best suited to protect oil and gas sands from the invasion of water—methods which will cheapen operations and thus indirectly add to the lessor's portion, since they may allow the drilling of smaller wells than have heretofore been economical.

UNDERGROUND WASTE OF GAS

"The underground waste of gas is particularly serious for the reason that the operator does not watch gas as he would oil; the loss is naturally more difficult to detect. Oil is so mobile that it escapes with great rapidity. A concrete case will show how rapid is the underground movements of gas.

"By reason of unsystematic casing, the gas from a deep sand in one well was allowed to

enter a shallower sand. It migrated through the sand a distance of 1,000 feet into another well. Within eight days the pressure in the second well had been increased by 75 pounds and the volume raised from 300,000 cubic feet to 1,500,000 cubic feet per day.

"It is evident that little good will result from correcting conditions on one property if adjacent leases are not operated properly.

"A large proportion of the operators had never known that any considerable waste of gas occurred underground until it was called to their attention by the Bureau of Mines and others. In particular, few operators had ever considered the matter of unsystematic casing until shown the diagrams illustrating it.

SURFACE WASTE OF GAS

"Surface waste of gas occurs when a well gets out of control or catches fire; when the operator deliberately allows the gas to escape because it interferes with drilling; when the operator drills through a gas sand and allows gas to escape while doing so, and when the gas which accompanies the oil is allowed to escape.

"Where the waste of gas is deliberate the operator deserves little consideration except when he is ignorant of means by which gas could be controlled. In such case it is necessary to show him how to control the gas by improved methods. Further, there are, now and again, conditions where it would be dangerous to life to shut in the bas, and much discretion must be used.

"Conditions regarding deliberate waste of gas throughout the State have improved very greatly, and it is believed that there will be few such cases in the future, especially if, under the new conservation law of the State, it is found practicable to pro-rate the gas.

"Where gas wells get afire or out of control, the operator is at fault only to the extent that occasionally he may be careless. Usually he is found to have insufficient knowledge of how to handle such cases. Occasionally, however, a fire or a wild well may be unavoidable and exceedingly difficult to handle.

"In conclusion I can state on the basis of reports at hand that the investigations of the Bureau of Mines have disclosed much waste of gas in Oklahoma fields, probably the most important being underground, and improvement in operating methods is highly desirable.

"Most good can be gained from educational and cooperative work. Much work has already been done and the attitude of the operators is rapidly improving.

"The Cushing field, as well as most of the other developed fields had, before this work was started, reached a stage that made possible only a prolonging of the life of wells, not a prevention of waste."

Thorium Discussed in New Paper.

Due to an increasing demand for thorium and messothorium the interest in these minerals as well as in monozite has increased. Many interesting and useful facts with regard to them is brought out in a technical paper just issued by the Bureau of Mines.

Most of the monazite imported in late years has come from Brazil, where the mineral occurs in the beach sands along the coast of certain states and where it could be mined more cheaply than from inland placers. The mining of monazite in the United States has been practically at a standstill since 1906, especially since the price for thorium nitrate was reduced by European manufacturers to such an extent that it could be imported more cheaply than it could be made here, and this in spite of an import duty of 25 per cent. ad valorem on the salt. In former years, especially previous to 1906, there existed considerable activity in the monazite belt of North and South Carolina and many hands were employed to mine the mineral. Since then practically no mining of this mineral has been done in these and other states where monazite occurs. It is believed that monazite can be mined in this country more cheaply than heretofore, provided more modern means are employed.

Mesothorium can be obtained as a by-product from thorium nitrate manufacture and this may help the American manufacturer to utilize domestic resources at least to some extent.

The paper contains a full description and references to occurrences of the mineral in this country and the methods used in the mining of monazite sands are thoroughly discussed. The best methods for the separation of monazite from other heavy sands are given, together with flow-sheets and other technical details.

A short outline of analyses for thorium is given and the methods employed in the chemical manufacture of thorium nitrate and mesothorium are referred to. The complete history of the development of this industry is of interest and is brought out in detail. It is of further interest to know, for instance, that in spite of the wonderful development and increased use of the metal filament lamp the consumption of incandescent gas mantles has increased.

Valuable points for the examination and valuation of monazite deposits are outlined in the paper. Monazite is found in the states of North and South Carolina, in Idaho and in the black sands of the Pacific slope.

Louisiana Oil Output Increases

Louisiana has been increasing its petroleum production every year until the total has reached 14,309,435 barrels. During 1914 there were 566 wells drilled in the State, of which 66 per cent yielded oil.

Discusses Aluminum Recovery

A paper upon the recovery of aluminum from aluminum scrap is being prepared by H. W. Gillette, for the Bureau of Mines. It is probable it will be ready for distribution within three months.

COLORADO LEADS IN INCREASED GOLD PRODUCTION

Idaho Makes Largest Gain in Silver Production—California and Arizona Make Good Increases

Director of the Mint Woolley has given out a statement showing that the total gold production of the United States for the calendar year 1914 was $94,531,800, and that the commercial value of the silver produced in that year was $40,067,700. The figures contained in this statement were compiled jointly by the Bureau of the Mint and the Geological Survey, and are available for publication two months earlier than were similar figures a year ago. The compilation was hastened because of the extraordinary interest at the present time in the question of the gold supply.

The production of gold was greater by $5,647,400 than in 1913, and the production of silver was 5,653,600 fine ounces ($3,126,400) greater.

The decrease in the gold production was mainly in two States—Nevada, $441,200 and Utah, $193,300, while the increases were as follows: Colorado, $1,792,700; Alaska, $1,345,900; California, $1,010,600, and Montana, $822,700.

The largest gain in silver was in Idaho—$1,712,500 (3,096,700 fine ounces). California gained $331,400 (599,300 fine ounces); Arizona, $291,700 (527,500 fine ounces); Alaska, $276,100 (499,200 fine ounces); Utah, $243,200 (439,700 fine ounces). The production by States was as follows:

State or Territory.	Fine ozs.	Value.	Fine ozs.	Value (Commercial).
Alabama	595	$12,300	300	$200
Alaska	800,471	16,547,200	865,900	478,800
Arizona	221,020	4,568,900	4,439,500	2,455,000
California	1,028,061	21,251,900	2,020,800	1,117,500
Colorado	962,779	19,902,400	8,804,400	4,868,800
Georgia	813	16,800	100	100
Idaho	57,431	1,187,200	12,573,800	6,953,300
Illinois	.....	.....	1,900	1,200
Maryland	10	200	100	100
Michigan	.....	.....	415,500	229,800
Missouri	.....	.....	60,000	33,200
Montana	200,446	4,143,600	12,536,700	6,932,800
Nevada	558,064	11,536,200	15,877,200	8,780,100
New Mexico	58,974	1,219,100	1,771,300	979,500
North Carolina	6,303	130,300	1,500	800
Oklahoma	.....	.....	6,200	3,400
Oregon	76,887	1,589,400	147,400	81,500
Philippine Islands	53,179	1,099,300	10,300	5,700
Porto Rico	135	2,800	.....	.....
South Carolina	155	3,200	.....	.....
South Dakota	354,782	7,334,000	179,800	99,400
Tennessee	309	6,400	102,800	56,800
Texas	426	8,800	574,700	317,800
Utah	163,362	3,377,000	11,722,000	6,482,300
Virginia	15	300	1,500	800
Washington	28,435	587,800	341,300	188,700
Wyoming	324	6,700	100	100
Total	4,572,976	94,531,800	72,455,100	40,067,700

BEST REPORTS ON TUNGSTEN ARE BY GERMAN AUTHORS

Considerable interest has developed in tungsten since the war. There is a scarcity of American literature on this metal, its ores and its reduction. The most complete work on the reduction of tungsten ore is that of Hans Mennicke. It is entitled "Die Metallurgie des Wolframs." Heinrick Leiser also has written a splendid report on "Wolfram." Both of these works are in German. A rather generalized account of the manufacture on a large scale of tungsten and ferro-tungsten is given in an article in the *Engineering and Mining Journal*, volume 90, 1910, page 959. It is entitled "Manufacture of Metallic Tungsten and Ferro-tungsten." It is by L. R. Pratt.

Reports on Marketing of Ore

Essentials of the mineral side of metalliferous work are discussed in detail in a report just issued by the Bureau of Mines. Charles H. Fulton is the author of the paper. He brings out many interesting facts with regard to the complex system through which ore passes from the mine to the plant where it is treated finally.

Marble Report Coming Out

A very pretentious report upon marble quarries is being prepared for the Bureau of Mines by Oliver Bowles. It is well illustrated and contains a large amount of interesting data based upon visits to practically every quarry in the United States.

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EDITORIALS

PROFIT SHARING ANALYZED; NECESSITY OF COOPERATION

Any adequate system of profit sharing in the end must lead to loss sharing as well. In the cooperative operation of a business enterprise the use of the capital requires a fixed charge, which must be paid first. Afterward the workers, upon some equitable basis, may divide the profits. A partnership in profits alone, leaving the losses to be borne by capital, is not only inequitable, but certainly would prevent investment and drive capital from the field of hazard. The wage system was devised to prevent just this situation, and until labor is willing to take its share of the inherent risks, it undoubtedly will continue as the ruling system for the conduct of business enterprises.

So long as the wage system shall prevail continual readjustments of the scale will be necessary. The wages paid should represent as nearly as possible labor's proper share of the estimated profits. This does not apply to any particular business, but to all lines contemporaneously employed in the production of articles reaching a common market.

Labor naturally seeks the highest wage market. This depletes the lowest wage market. An increase of wages becomes necessary if any labor is to be available.

The profit and loss sharing system is simply a partnership in business. The profit sharing system is an effort, not only to approximate the proper wages, but also is an incentive to efficiency. The latter reason usually is dominant.

Operation by lease of many metalliferous mines in the West is largely an effort to equalize earnings in properties which do not pay enough to justify the current wages. At least, owners are not sufficiently certain of the value of the production, to justify guarantee of the current wage. Labor, no matter what its temporary attitude, in the end must be paid from its own earnings. Temporarily it may be paid from an increasing deficit which will bring the principal to *bankruptcy*. *Labor is entitled to its full share of production and must be satisfied with its share.* To get more than its share in the end takes from it the machinery of production which is supplied by *capital*. Labor under present conditions is as helpless without capital as capital is without labor. In union only is there strength.

RIGHT OF APPEAL FROM LAND OFFICE DECISIONS

It is the prime right of every American citizen to go to law. It is because of the existence of this right that each individual citizen is willing to surrender his right to protect himself. Thus he makes himself a member of organized society.

Wherever this right is denied, we create an excuse for lawlessness.

One of the very few instances in which this right is denied to American citizens is illustrated by a decision of the Interior Department of the Federal Government, a synopsis of which was given in the August number of the MINING CONGRESS JOURNAL.

The case referred to is entitled "The

United States *vs.* The Pacific Midway Oil Co., et al. The defendant in this case, according to the record, had spent more than $900,000 in developing the property under the provisions of our mining laws.

We do not presume to pass upon the justice of this decision, but we do insist that the defendants in this case, after spending nearly a million dollars in the development of the natural resources of the country, should be entitled to a hearing before an unbiased tribunal. It may be contended that the Interior Department, which is the final arbiter of this and similar questions, is such a tribunal. An examination of the facts may demonstrate that the United States Government is a party in interest to this controversy and that any administrative arm of the Government is charged necessarily with the interest of its principal.

DEVELOPMENT OF LAND LAWS

It is interesting to trace the development of the conditions which have brought us to the present status. Originally the Western territory was considered by all to be of doubtful value and by many to be a direct burden upon the Federal Government. Later it was found to possess value, but to recover that value large and expensive development was necessary.

In order that this might be accomplished it became the policy of the Government to offer the reward of ownership to induce settlement through which it might secure the development of its natural resources. For this purpose liberal homestead laws were enacted for its agricultural lands and more or less liberal laws were created to protect the rights of discoverers of minerals.

During this period it was the policy of the Federal Government to pass its land into private ownership as rapidly as possible, due regard being observed for other citizens who might have a right to claim bounty of the Government. The principal purpose was development and settlement.

THE LEASING SYSTEM

A few years ago a new theory was developed having for its purpose the perpetuation of the Government's title in these lands. They are to be leased for the purpose of development, but a part of the royalties to be derived therefrom goes into the Federal Treasury. In anticipation of the carrying out of this proposed plan large areas of coal, oil, and phosphate lands and water-power sites were withdrawn from public entry.

Before this new policy was adopted the Interior Department could act without bias because it was not called upon to do more than see to it that the mineral land laws had been observed in the steps leading up to the application for patent and that the rights of other applicants were given due consideration. In other words, any contest for a patent before the Land Department was an issue between contesting parties asking for the same land. The Government had no other interest than to see that substantial justice was done between the contending parties. Had the above case been between The Pacific Midway Oil Co. and some other company asking for a patent it would have been eminently proper that the Interior Department should sit as a final arbiter in the premises. But when, as in this case, the contest is between the Government itself and the applicant, more than a declaration of fairness will be required to convince the public that the applicant has had a day in court. In such cases it would seem but fair that the applicant have the right to an appeal from the decision of the Interior Department to some court of competent jurisdiction.

THE DISTRIBUTION OF WEALTH

Since the dawn of civilization, the distribution of wealth has been a dominant question. Conditions have become more difficult as wealth and the means of wealth-production have become more complex. Philosophers and economists have devised various complicated and divergent plans by which the profit of production could be distributed equitably. The very divergence of these various plans proves that all but one, if not all, are inadequate. Each may have had some element of merit. Even

though the merits of all could be combined into one plan, still the execution of that plan must be brought about by human agencies, so diversified and antagonistic as to make agreement absolutely impossible.

The individual can solve his own problem in his own way only when unhampered by the relations of society. Each individual not so hampered probably would work out his own destiny in accordance with his own notions and ability. Under modern industrial conditions this is so impossible as to make its consideration entirely futile. The struggle of each individual member of society to better his condition is not only proper but essential to human advancement. It is therefore unwise, as well as useless, to condemn the individual for striving to better his condition. Such effort, however, must be made without violation of the rights of others. Any violation of the laws of society not only must be condemned but must be suppressed unless we are willing to sacrifice the whole bulwark of organized government.

LAWS MUST BE RESPECTED

The rules which now protect society represent the wisdom and the experience of the ages and most nearly represent the will of that public through which they have been developed. This does not prove their perfection, but only that, so far, they are the best which the majority could agree to tolerate.

In a complex society the least of evils frequently must be chosen. To bring public sentiment to the higher plane of thought is to make possible the acceptance of more complete rules of society. Law, the rules of society, represents those abstract principles of justice which have so far been accepted. The general violation of these laws means the destruction of government and the society which it protects. The complete overthrow of government has been the means through which some reforms have been made effective. These examples frequently, if not always, have brought untold suffering to the reformers, who paid altogether too dearly for the improvement by which others benefited, but which, as a rule, were not available to those who made the sacrifice.

In the struggle for better conditions the rules of society must be respected, if those who make the sacrifice expect to profit by the victory. In order that the rules may be changed in an orderly way it is necessary that popular sentiment upon the subject shall be so modified as to bring the majority to favor the proposed change.

INDUSTRIAL DISPUTES

So long as capital and labor, for instance, work along separate lines progress will be slow. The experience of the last year in the settlement of industrial disputes has not been of a hopeful character. It can be doubted whether any progress has been made. The number of industrial disputes accompanied by violence and bloodshed is almost too large for enumeration. No one can predict with any degree of accuracy what the remedy or remedies are to be. It seems certain that, whatever the remedies, they can only be made effective by the cooperation of the conflicting elements and with the consent and perhaps the active assistance of the general public, which in the end pays all wages engaged in production. The shocking loss of life through labor disputes, the enormous loss in property destroyed,the burdensome expense upon State government in the maintenance of its militia in efforts to preserve order, and the intense bitterness between elements which should be working in harmony, to say nothing of the increased cost of production which later must be paid by the consumer, each and all call and call loudly for some different method of solution.

TAXPAYERS WILL ASSERT RIGHTS

The conflicting elements, employer and employe, should settle the question. Is some movement possible which will bring together the representatives of both sides in these disturbances? It is necessary that they agree upon principles which each side will respect. If they fail to agree, the general public will take control and settlement will be forced. For instance, the taxpayers of Colorado,

placed under a burden of more than a million dollars of indebtedness because of its labor wars, will not permit a repetition of those conditions. The taxpayer and the consumer have rights which are entitled to respect and they have the power to command it. The parties in direct interest should cooperate along intelligent lines. Can such action be hoped for? The MINING CONGRESS JOURNAL will gladly open its columns for a discussion of this question.

USE OF ILLUSTRATION MISTAKEN FOR CRITICISM

A prominent member of the American Mining Congress, residing at Portland, Oreg., takes exception to the editorial in the August number of the MINING CONGRESS JOURNAL, under the title of "The Responsibility of Service," in the following language:

> I am surprised to notice in the last issue of the MINING CONGRESS JOURNAL your bitter attack upon Mr. Bryan. I do not understand that it is a part of the duty of the American Mining Congress or its official publication to make a gratuitous assault upon one of the foremost American citizens and leaders in public thought. It seems to me that the JOURNAL will find abundant labor in advancing the true interests of the Congress and should not find it necessary to invite antagonism and dissension. I can conceive of no reason for the attack upon Mr. Bryan unless it is born of a fear that his efforts may, sooner or later, bring to a close the present wholesale slaughter of our brothers in Europe and thereby incidentally reduce the artificial price of certain products produced through the mining industry.

From the writer's viewpoint, his criticism is absolutely just and well taken, but the JOURNAL denies any intention of assaulting or even criticizing Mr. Bryan for the sake of criticism.

We called attention to Mr. Bryan only to illustrate by the most brilliant example possible the growing tendency toward inefficiency in service. This was referred to in the editorial in the following language:

> This is said not in criticism of Mr. Bryan personally, but of a method of thinking so dangerously prevalent that even Mr. Bryan, with his high ideals, could even unconsciously become a victim of its insidious influence, and so prevalent that this exhibition in high place called forth no public disapproval.

Mr. Bryan, in defense of his position, stated that notwithstanding the absences for which he was criticized, he had been at his desk more hours than had his predecessors in office.

We have no doubt of the truth of this statement and its very truth emphasizes the point in issue.

If the men who hold the higher positions either in public life or in large industrial enterprises can shirk their responsibilities and still draw their salaries, why should the men in the ranks be expected to do more than is necessary to hold their jobs?

The time when all wage-earners from public officials and railroad presidents down to the laborers in ditches are working for "sundown and wages" will witness the downfall of American industrial supremacy.

We believe the future industrial prosperity of this nation depends upon the efficiency of labor. Germany's wonderful industrial power is based upon the frugality, the industry and the efficiency of her people. As time goes on, the industries of this country will need to compete not only with German efficiency but with Oriental efficiency and unless, as a people, we recognize the necessity of the highest efficiency, we shall fail in that competition.

It is the highest possible compliment to Mr. Bryan, the writer feels, that his short-coming is regarded as the most striking illustration of the principle involved.

CUT IN APPROPRIATION SHOWS POOR JUDGMENT

When Congress clipped $50,000 from the appropriation of the Geological Survey, it did not realize that this action would make it impossible for a number of the Government's expert geologists to do work in the field. Fifty thousand dollars will do a great deal of field work which is such an important portion of the work in a country with areas so vast as the United States. The mining industry suffers from this interference with

the work being done for its advancement. On the other hand, no economy is effected. In fact, the curtailing of the appropriation of the Geological Survey is considered, by persons in a position to know, as a splendid illustration of being "penny wise and pound foolish."

Fortunately, several of the field geologists had accumulated a certain amount of field data which needed to be worked up for publication. For this reason the loss of the appropriation for one year is not as serious as it would be if continued for another twelve months.

As a result of being unable to send a number of geologists to the field this summer, a general "clean-up" is taking place in the Washington office so that all the experienced field geologists will be ready to go into the country the minute the next appropriation is available.

Another benefit accruing from the enforced stay of many geologists in Washington this summer is quick handling of the ever increasing volume of correspondence. The Survey office force on previous years has been almost overwhelmed in its efforts to handle the correspondence during the absence of the field men, who have expert knowledge on many subjects concerning which the public makes inquiry. In the course of their work these men have opportunities to become intimate with many localities. It is a practice in the Survey, during the winter, to have such inquiries referred to the field man who may be best acquainted, by reason of his experience, with the area concerning which inquiry is made.

Previous to this summer, it often has been necessary to delay replies to this type of correspondence which the Survey does not regard as a matter of clerical routine. This class of correspondence is regarded as deserving and demanding a consideration of scientific specialists.

It is the ambition of the Survey to keep it preeminently a field service with headquarters in Washington rather than merely a Washington bureau. In this connection, it is recalled that all four directors of the Geological Survey, King, Powell, Walcott, and Smith, made their reputations as field geologists in the West before assuming official direction of the service.

INCREASING PRODUCTION COSTS ENDANGER ALL

We call special attention to a letter from Courtenay De Kalb, appearing elsewhere in this issue, which calls attention to a vital question—one which will command the attention of all public-spirited citizens. Even now the pinch is beginning to be felt as the demand for copper and spelter is become less acute, while the increased production which followed the extraordinary price of these metals finds itself unable to secure the price which stimulated the increased output.

While the general business conditions promise steady improvement, this promise is only justified by production costs, which will enable the product to be sold in competitive markets.

The general tendency toward increased cost of production, through demands for higher wages, increases in freight rates, increased taxation and increased cost of supplies, will necessarily make competition harder to meet unless increased efficiency shall absorb the difference.

This, under present conditions, is hardly to be hoped for.

The State of Massachusetts has awakened recently to the fact that the cost of supporting her government for the year 1915 is nine and three-quarter million dollars, an increase of a million dollars over the expense for the year 1914, and that the 1915 governmental expense is approximately three times greater than the cost of maintaining its government fifteen years ago. In every direction we meet increasing expenses not only in higher prices but in greater and more varied consumption.

Any adjustment of the labor question should provide such a wage as will enable the industrious, frugal man, during his working years, to support his family as befits his station in life, educate his children and provide support for the non-productive years of his later life. Anything less than this is unfair to the laborer; more than this is unjust to the consumer. It is not a question of how many dollars the wage-earner receives, but of how much he shall have remaining

after he has provided the necessities of life. A cost of living so high as to absorb the entire wages paid, leaving no possible saving is no better to him than a very small wage, and such lower cost of living as will enable him to accomplish the same results.

We sincerely hope that Mr. De Kalb's prediction that the laboring classes "will beg for work as never before, and when no man can give it to them" will not come true.

It is hardly possible, however, for anyone to predict with certainty what conditions will exist when the great reorganization of the world's finances and industries shall follow the ending of the war. Certain it is that more cordial relations, more sincere cooperation between employer and employe will be of untold advantage in every possible situation.

We believe that the statement of Mr. De Kalb that the American Mining Congress "is in reality the most democratic of mining organizations" is correct. It will be more than glad if it can be used as a medium through which better relations between labor and capital can be established.

We hope to hear from others concerning this important question.

THIS ISSUE GOES TO EVERY OPERATING MINE

This issue of the JOURNAL will go into the office of practically every operating mine in the United States, including Alaska. So far as news matter is concerned it contains no more information than is carried by the regular monthly JOURNAL.

It is of the utmost importance that mining men be kept advised of the work being done in their behalf by the government. Washington also is the center of various other activities with which mining men should never be out of touch.

For years we have been impressed with the thorough manner in which the lumber papers have covered the Washington field. The Forest Service is combed each week by these papers and the lumbermen of the country are fully cognizant of the work being done with public money in the interest of their industry. The same publicity is given the work being done in behalf of the farmer. In fact all industries pay close attention to news from this important center.

It is a matter of considerable expense to keep in constant touch with the widely scattered sources of information in Washington. The technical mining journals have other important ground to cover. This is one of the reasons which caused the American Mining Congress, at the beginning of this year, to expand its occasionally-published bulletin to members, into a formal monthly publication. This not only gives a ready medium for the chronicling of events of importance in the Mining Congress work but gives us the opportunity of furnishing the mining industry the first comprehensive news service covering the government's work in the interest of operators of mines.

There is more than $1,000,000 spent every year by the government with the idea of advancing the mining industry. It is essential that every mine operator be kept closely informed of the work being done with this money. The appropriations for mining purposes are wisely administered. A tremendous volume of work is done each year. The mining men of the country should know just as much about the progress of this work as is possible. This is so evident that we wonder why an independent mining paper was not started here years ago. THE MINING CONGRESS JOURNAL is attempting to give this necessary service. As more advertising support is given the JOURNAL it will be possible to better this service.

In addition to keeping the mining public advised as to the work being done with the $1,000,000 the nation furnishes for the advancement of the industry the JOURNAL covers the daily work of the Interstate Commerce Commission. Traffic matters form an important part of modern business. This feature alone makes the JOURNAL a necessity for every mining man who is shipping or expects to ship ore. Patents with a bearing on mining are of great interest. They are covered in full in each issue of the JOUR-

NAL. The Land Office with its far reaching decisions is the source of vital information to many mining men. The Supreme Court, the Departments, Congress and other centers of developments with which the live, successful mining man must keep in touch are covered in detail. No progressive mining man can afford to be without the service offered by THE MINING CONRGESS JOURNAL.

We want you to keep in mind the fact that THE MINING CONGRESS JOURNAL is the property of the members of the American Mining Congress. They are interested in its success. They watch closely the advertisers who patronize their own paper. It goes without saying that, other things being equal, they will buy machinery and supplies from those who patronize their publication.

Profits of the MINING CONGRESS JOURNAL go to further the work the Mining Congress is doing. They help us in our continual campaign for laws more favorable to the mining industry. They help us watch for and expose results from proposed legislation which would injure mining.

The Mining Congress is doing a big constructive work. Its activities could be increased remarkably if all mine operators would bear their part of the expense. As it is, however, there is no grumbling on the part of those who are paying for the advantages which go alike to those who do not contribute. Little by little we expect to show all the mine operators of the country the need for their support to the work being done by the Mining Congress.

FOCUSES ATTENTION ON AMERICAN WASTEFULNESS

Financial America calls attention to the demand for high explosives which has drawn sharply to the foreground the waste that has been allowed to exist and seems to be still fostered in our whole coal tar industry. The editorial calls attention to great economic questions in the following language:

> Germany has for years controlled, and still does control, the market for chemical dyestuffs. This control she exercises simply because she has the foresight properly to organize her industries and to eliminate all possible waste. For this we yearly pay her a handsome profit, and now we feel the loss severely. With the prospect of several years of war ahead and this supply effectively shut out of our market, it is necessary for us to look to ourselves for relief. We have the basic materials in abundance if we will but turn them to the best account. We can make our own dyes, whether alizarin or aniline. The natural basic dye stiffs we can buy from our Latin American neighbors, but as these are mostly fugitive colors their use is only a temporary stop gap at best.

It may be of interest to note that several months ago, shortly after it became evident that the need of many chemical substances, which have been supplied by German importation, would likely cause a shortage of production in many lines of industry, Secretary Lane of the Interior Department, called together in conference a number of the leading American manufacturers of chemicals. No complete report of this conference ever was published, but random reports were to the effect that the temporary demand for these articles did not justify the necessary investment. It was reported to be the unanimous opinion of the manufacturers who were present that the temporary demand was likely to be terminated by the cessation of the European War, and that without a guarantee of tariff protection, capital could not be found to embark in such enterprises.

Financial America also calls attention to the fact that we are deliberately throwing away at home articles that we are forced to buy abroad, and specifies one of the reasons in the following language:

> The extravagance in methods of living is no doubt somewhat to blame for this. The forced economies which the war brought about seem to be overcoming this, but the recent insistent demand of labor for shorter hours and higher wages are again putting us on the high road to wastefulness. It is the part of business men to see that this movement is checked in its infancy, for while it may be true that abnormal profits are accruing to certain lines of manufacture it must be remembered that abnormal conditions prevail in those lines.
>
> If labor succeeds in attaining its ends now, when peace comes, we shall not be in a position to meet the competition which will be thrust upon us and consequently the industries we seek to create and foster will die aborning.

This latter question reaches into every line of production which comes into

competition with foreign products. It is evident that in every line of production the cost of laying down the article at the door of the consumer must not be in excess of the cost of a similar article of foreign manufacture. The question of wages and hours cannot be determined on one basis for the manufacture of articles which have foreign competition to meet and upon another basis in other lines of effort. It would be foolish to expect labor to render its service for less in a competitive industry than in some other industry in which no foreign competition prevails.

If therefore, we expect to meet this competition by decreasing wages or by shortening hours we shall need to revolutionize the whole industrial fabric of the country.

MR. MANNING WELL FITTED FOR THE DIRECTORSHIP

A very wise selection has been made by the President for the directorship of the Bureau of Mines. Mr. Manning was appointed to this important post on the recommendation of the Secretary of the Interior. Mr. Lane did not act percipitously. He waited until indorsements for various candidates had been received. After sizing up the abilities of each man suggested he decided Mr. Manning is best fitted to fill the place.

Some suggested that a mining engineer of note should be named. The names of several were mentioned. Some of these would not consider accepting a post paying no more than $6,000 annually. Those who might have listened to the offer were not so well equipped for the place as is Mr. Manning.

Mr. Manning is not a mining engineer. His technical training has been confined to his twenty-five years' service with the Geological Survey and his five years in the Bureau of Mines. There is no question that this fits him for this particular post. Probably it has been better training than the same number of years spent in the practice of mining engineering. It must be taken into consideration that the direction of a big Government bureau calls for a special class of administrative ability. Many a theoretically ideal bureau chief has failed completely from lack of this quality. Mr. Manning has grown up in the Government service. His administrative ability contributed not a little to the success of the late Dr. Joseph A. Holmes.

Mr. Manning was the choice of many members of the Mining Congress. In their personal capacities they urged Mr. Lane to recommend him. The Mining Congress as an organization refrains from backing any candidacy.

None is in a position to judge better the manner of man selected than is the Mining Congress. We unhesitatingly predict that Mr. Manning will conduct the Bureau in a manner that will maintain the lofty prestige it already has attained.

BIG FIELD OFFERED FOR COOPERATION

The American Mining Congress again appeals to the mining men of the United States and those who are directly interested in the development of mining to join in a more comprehensive effort looking to bettering the conditions of the mining industry. There is still need for increased effort looking to the greater safety of the men engaged in mining operations. There is a growing need for increased effort looking to greater efficiency. The need for a better conservation of our mineral resources, and particularly our fuel resources, will grow more intense as time goes on. The crucial need is a better spirit of cooperation between labor and capital.

The coal mines of the United States represent an investment approaching one and one-half billion dollars and more than 700,000 men are directly employed in this branch of the industry, their wages representing practically 75 per cent of the cost of coal production. This productive force has been frequently interrupted in its operations by disputes concerning wages and living conditions in which both capital and labor suffered, to say nothing of the inconvenience and burden of expense which has been suffered by the public who are only indi-

rectly interested in the mining industry.

No reasonably correct estimate has ever been made of the amount of money invested in metalliferous mining operations. It is fair to assume that the amount would total more than a billion dollars, employing more than 300,000 men. The idleness of this capital and these men for extended periods places a burden upon the cost of production, which destroys efficiency and largely increases costs of production.

The problems thus presented are grave and important, threatening our Government upon the one hand and adding immensely to the difficulties of business enterprises. The American Mining Congress presents an open forum for the discussion of every subject related to mining and it places no restriction upon membership other than that of good character and an interest in the mining business.

We urge all who are interested in bettering mining conditions to join hands with the faithful men who have carried on the work of the Mining Congress. The problems are too large for solution by a few and must have the support and assistance of the great majority of those who are interested to accomplish the best results.

GOVERNMENT'S MINING EXPERTS MEN OF MERIT

As the work devolving upon the Bureau of Mines and the Geological Survey requires the frequent presence of members of their staffs in mining regions, mine operators are acquainted with the type of man in the Government service. Consequently, there may be nothing particularly illuminating in the following tribute which we wish to pay to these efficient public servants.

Daily contact with the men who are striving to make the work of the miner more certain to result successfully, convinces us that few bodies of men are more efficient or so willing to subordinate themselves in the interest of composite achievement. The work the Government is doing toward advancing the mining industry runs quickly to a plane of technical complexity. Even the elementary positions in this work require long and expensive preparation. Graduates of technical schools start in the service at very low salaries. Promotions are slow and many times are dependent on the whim of an unsympathetic appropriation committee in Congress.

After entering the service the young man with his high-priced education is assigned to routine duties. There will be few occasions on which he will have an opportunity to display his ability to the public.

Mines are isolated. Geological work is not done on the stage of a theater. Few see or hear of the scientist as he delves into the secrets of rocks and strata in a remote corner of the country. When he returns to Washington, reports must be written covering the months of field work. Thus the winter passes. The four narrowly separated walls of a stuffy office limit the activity of the Government's experts while they are in the capital. Opportunities are few for being in the path of even a passing sweep of the spotlight.

Much of the information gathered in the field simply fills a few spaces in a table of figures. Now and then the name of the writer will appear on a report. The matter discussed is certain to be prosaic and of interest only to a limited number. Reports are more likely to draw criticism than praise.

When grey begins to streak the hair of the average scientist in Government service he usually looks back on years of hard and meritorious work but realizes that he hardly is known outside of his own bureau.

Few vocations call for as much hard work and give so few opportunities of personal reward.

It is an exceptional body of men that has been assembled to serve the mining industry. Its work deserves more general recognition.

A word as to the directorship of two bureaus working principally for the advancement of the mining industry should be said. From the time of Benjamin Franklin, American statesmen have feared a salaried bureaucracy. Throughout the life of the republic many have advocated the payment of no salary to

the heads of bureaus. Patriotic citizens could be found who would perform these duties without salary, it is held. While these directorships have not been placed on exactly an honorary basis the remuneration has been kept at such a low figure as to make the salary no inducement for seeking the place.

It is acknowledged by those closely in touch with the situation that a man who can direct successfully either the Geological Survey or the Bureau of Mines can secure twice the salary in private work.

Dr. Holmes, the late director of the Bureau of Mines, it will be recalled, refused a $20,000 position offered by the United States Steel Corporation. Dr. Smith, the incumbent of the directorship of the Geological Survey, is known to have received numerous offers carrying much higher salaries than he is receiving from the Government.

So it is seen that even the highest places in this service call for self-denial and a curb for personal ambitions.

On the whole the men who look after the Government's mining research are worthy of highest commendation and should be encouraged by active and wholehearted cooperation on the part of every mine operator.

Geologists who are expert specialists in different subjects frequently are sought by the commercial corporations and tempted with salaries very much greater than those paid by the Government. Occasionally a man resigns because he cannot afford, in justice to his family, to continue in the service at the Government rate of compensation.

A rough calculation made some time ago in the Geological Survey showed that the average increase in the salaries of twenty geologists who had left the service was two and two-thirds times the amount being received at the time of resignation. These twenty men left the service within two years' time.

PENNSYLVANIA IN DIRE NEED OF NEW TAX LAWS

Special attention is called to an article in this issue of the JOURNAL, by William Griffith, a prominent Pennsylvania mining engineer and geologist.

Mr. Griffith sets forth concisely the unfair methods used in making assessment of mineral land in his State. The article is well worth reading.

We hope sincerely that it will not be long before the people of Pennsylvania demand that the legislature enact some remedial laws to ameliorate this condition.

INSTRUCTIONS UNHEEDED; TOLL IN LIVES A RESULT

Every few days comes word of men being killed in mine explosions. The other week, nine men lost their lives in this manner in a coal mine at Johnstown, Pa. The State inspector and his deputies, after making an investigation, declared that a shot had liberated a small quantity of gas which was ignited by the workmen's lamps; that the same shot by its concussion had raised the coal dust and that the lighted gas had set fire to the coal dust, causing an explosion.

The inspectors recommended that permissible explosives be used in the mine; that noncombustible material be used exclusively in tamping; that the mine be kept as free as possible from coal dust; that the coal dust be kept watered, loaded and sent from the mine; and that locked safety lamps be used exclusively throughout the mine. All of these recommendations have been issued repeatedly by the United States Bureau of Mines.

It is a pity that men responsible for the operations of coal mines cannot grasp the full significance of such recommendations until there has been a disaster costing the loss of many human lives.

It is a pity that it is necessary AFTER an explosion to make recommendations that apply to coal mines generally before an explosion.

WASHINGTON OFFICE ALWAYS AT SERVICE OF MEMBERS

We are glad to have been of service to several members of the Mining Congress during the last month. We realize that the Washington office is in a position to be of help to members and we shall be only too glad to aid in any way possible.

In this connection we may mention that most reports made to the land office by surveyors and other agents are confidential. We cannot furnish copies of these reports or even ascertain their general drift. Other information regarding land matters are public.

When requests for service from members involves extensive copying it will be necessary to make a charge for the actual cost of this work.

CONVENTION HEADQUARTERS

The Palace Hotel, San Francisco, has been selected as the official headquarters of the American Mining Congress, during the convention, September 20–22. Delegates and members desiring reservation will do well to communicate either with the Palace Hotel, or with Secretary Callbreath at the earliest time possible. A considerable number of rooms have been reserved, the charge for same to be as follows: $6 for double rooms occupied by two people; $4 for single rooms occupied by one person.

MINING SHOW IN 1916

Officers of the Mining Congress have under consideration the advisability of staging a "Mining Show" in connection with the 1916 convention.

The general purpose of those now having this matter in mind is to demonstrate, through practical illustrations, the various items in the cost of mining transportation and exchange of coal, in order that the public shall be able to understand better the actual conditions of coal mining, the great advantage to be derived through safety, efficiency and conservation and the necessity of general cooperation to accomplish results.

It is suggested that the holding of such an exposition in one of the larger Eastern cities, would justify the Western states in illustrating the problems of metalliferous mining, upon such a scale as would be of general interest to the public, and advantage to those who shall sustain the expense.

This subject will be considered at the San Francisco convention and definite conclusion reached as to the advisability of such a course.

Mining in Idaho Looks Up

The rise in lead prices is expected to spur many of the Idaho companies to increased production. A large increase in zinc production will certainly be made, as the main producer, the Success, Morning, and Interstate Callahan, have smelting contracts and are making every effort to meet an increased demand, government experts say. The copper situation in Custer and Shoshone Counties has been stimulated by the better price.

VARIETY OF QUESTIONS HURLED AT SURVEY MEN AT THE FAIR

Some of the trials and tribulations of the men in charge of the exhibit of the Geological Survey at the Panama-Pacific Exposition, are outlined in a recent letter. Among one day's grist are the following:

One man wanted to be given a list of localities where there are mine dumps, tailing piles, or impounded slimes that contain $1 or more per ton in gold, lost through crude methods of treatment. A woman brought a handful of ore to ask if the mine is any good. Here are some of the questions asked: Where can I get a large map of the United States? What do you know about agricultural possibilities in Susitna Valley, Alaska, and has the Survey a report on that region? Can you show me some willemite and does it occur anywhere outside of New Jersey? Is so and so going to operate his dredge on Seward Peninsula this year? Have you a copy of the Santa Fe guide book published recently by the Survey? Where will the Government railroad in Alaska get its lumber? How does the public get press notice of new Survey publications? What is radium really good for, and is it true that Germany has $250,000 worth on exhibit here? How long does it take to go to Dawson, Yukon Territory? Can you show me some tin ore and where is it produced in this country? Is the Matanuska coal field better than Bering River? Does Cook Inlet freeze in winter? Will they ship coal from Knick Arm or take it to Seward? Why did the Survey publish on the Skinimo quadrangle instead of, or before, Bright Angel? Are Alaska mining laws the same as the United States? Where can I find out about some mining claims in Nevada? Where does the Ocean Shore R. R. go? Where is there good hunting in Alaska? A little old lady whose boy "works on a survey" somewhere in Arizona asks, "Don't you know him? He works for the Government." The Boston broker who wants to be directed to a reliable mining engineer; the saloon keeper from Juneau with a gold nugget like a hen's egg; the Oregon rancher who wants to know if there is oil in his State; the school teacher who wants to see some radium—all are given the best information available.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR."

LOVELL'S CABIN, ON ONE OF THE NORTHERNMOST TIN PROPERTIES IN THE WORLD. IT IS ON CAPE MOUNTAIN, ALASKA. THIS PHOTOGRAPH WAS TAKEN IN THE MIDDLE OF WINTER.

McCASKEY INSPECTS WESTERN GEOLOGICAL SURVEY OFFICES

H. D. McCaskey, head of the Mineral Resources Division of the Geological Survey, left August 20 on his annual administrative inspection trip of the mineral resources offices of the Geological Survey at San Francisco, Salt Lake City, and Denver. He will be gone a month.

These offices were established principally to contribute to the mineral resources report of the Survey. They are in charge of the following statisticians: Chas. G. Yale, 305 Customs Building, San Francisco; Victor C. Heikes, 312 Postoffice Building, Salt Lake City, and Chas. W. Henderson, 311 Chamber of Commerce Building, Denver, Colo.

These statisticians also are the authors of the annual mine reports on gold, silver, copper, lead, and zinc, covering the entire Western States.

The offices of the Survey are very useful bureas of information in the West and the men in charge have done very good work, not only in distributing Survey publications and explaining the Survey work but more so in giving general assistance to the public, for which they are specially fitted by reason of training in Survey work.

The territory covered by Mr. Yale is California and Oregon; that covered by Mr. Heikes includes Utah, Arizona, Montana, Nevada, Washington, and Idaho. Mr. Henderson has Colorado, South Dakota, Wyoming, Nevada, Mexico and Texas.

Incidentally to their own work, the men in charge of these branch offices gather a great deal of useful information for the Washington office. These offices also act in a way as field headquarters for the surveyors, geologists, and topographers. In other words, the three offices form a line of outposts of the Washington office which cover the most important metal mining territory between the Mississippi and the Pacific.

AUTO TOURISTS FIND SURVEY'S MAPS ACCURATE

A number of motorists have expressed appreciation of the maps of the Geological Survey. A retired admiral, after an extended motor trip states in a letter to the Survey: "I piloted the party through without making a wrong turn. The automobile books are 'not in it' with the Survey's maps."

DEVELOPMENT OF PHOSPHATE FIELD IN KENTUCKY IS PROGRESSING

An investigation of phosphate in the central Kentucky field has been completed by W. C. Phalen. This field is small but is assuming considerably more importance since the entrance of the Charleston Mining and Manufacturing Co., which is operating extensively in the region.

TRAFFIC DEVELOPMENTS OF THE MONTH

Anthracite Coal Case

Pursuant to an order of June 10, 1912, a general investigation was made of the rates, practices, rules, and regulations governing the transportation of anthracite coal from the Wyoming, Lehigh, and Schuylkill regions in the state of Pennsylvania to tidewater ports and interior points on the lines of the initial anthracite carriers. In this case the Interstate Commerce Commission holds:

1. That the rates on anthracite coal, prepared and pea and smaller sizes, in carloads, applicable from producing districts in the Wyoming, Lehigh, and Schuylkill regions in the state of Pennsylvania to tidewater ports and certain eastern interior points are unreasonable, and the rates on anthracite coal, prepared and pea sizes, from these districts to other interior points are unreasonable, and reasonable rates fixed for the future.

2. That the respondents by means of trackage arrangements and the free transportation to junction points in the mining regions of coal exchanged by their allied coal companies, have extended the advantages of interline transportation to their coal companies to the prejudice of other coal shippers to whom interline transportation at joint rates has been denied. Respondents required to establish through routes and publish joint through rates applicable thereto.

3. That anthracite coal is a low-grade commodity which is transported in vast quantities in trains of maximum tonnage. The tonnage loaded in each car is much greater than the loading of most other classes of traffic. Most of the anthracite tonnage is shipped from collieries whose daily production, measured in carloads, is very large. These conditions tend toward lower operating costs.

4. That concessions and offsets granted by respondents to their allied coal companies in the form of interest charges, royalty earnings, the use of valuable property at inadequate rentals, the free use of the carriers' funds and credit, or by other means are as pernicious as direct cash rebates. Such concessions and offsets are unlawful.

5. That lateral allowances paid to a coal shipper in accordance with an agreement, alleged to be additional compensation for the use of a facility furnished by the shipper, are unlawful rebates.

MCCHORD WRITES OPINION

Chairman McChord wrote the opinion. In part he said:

Pursuant to an order of June 10, 1912, a general investigation was made of the rates, practices, rules, and regulations governing the transportation of anthracite coal from the Wyoming, Lehigh and Schuylkill regions in the state of Pennsylvania to tidewater ports and interior points on the lines of the initial anthracite carriers; and whether such coal is mined or produced by or under the authority or control of common carriers engaged in the transportation thereof, or whether said common carriers are directly or indirectly interested in the production or sale of the anthracite coal which they transport.

These rates, practices, rules, and regulations have been, since the year 1890, the subject of several formal complaints to this Commission and many informal complaints by shippers of anthracite coal. The Commission's order under date of June 10, 1912, named all carriers in official classification territory, but it was found impracticable to extend the present inquiry beyond the financial affairs and operations of the eleven initial anthracite carriers.

Freight rates on many commodities are but an infinitesimal part of the price which the consumer pays for such commodities. On coal the freight rate is a more important factor. Anthracite coal is very largely a fuel for domestic use, and it is a necessity. That reasonable freight rates should be charged for the distribution of the great fuel tonnage herein involved is of vital importance to the producers and of equal concern to the consumers.

THE INITIAL CARRIERS

The initial anthracite carriers, respondents in this case, are:

The Central Railroad Company of New Jersey.
Philadelphia & Reading Railway Company.
The Delaware, Lackawanna & Western Railroad Company.
Lehigh Valley Railroad Company.
Erie Railroad Company.
Wilkes-Barre & Eastern Railroad Company—New York, Susquehanna & Western Railroad Company.
New York, Ontario & Western Railway Company.
The Pennsylvania Railroad Company.
The Northern Central Railway Company.
The Delaware & Hudson Company.

Excepting the Delaware & Hudson Company and the Northern Central Railway, the railway lines of all these carriers extend to tidewater. The railway lines of the Delaware, Lackawanna & Western Railroad, Lehigh Valley Railroad, Erie Railroad, New York, Ontario & Western Railway, Pennsylvania Railroad, and Northern Central Railway extend to Lake Ontario and Lake Erie ports.

Many of the facts and figures gathered during the investigation have been omitted from this part of the report, but in order that they may not be lost sight of they are included in the appendix, which is made a part of this report.

The railway lines of most of the initial anthracite carriers were constructed into the mining regions long prior to 1890. The Scranton branch of the New York, Ontario & Western was extended into the mining region and completed in July, 1890. The consolidation and construction of a number of the railway lines

making up the New York, Susquehanna & Western Railroad occurred during the eighties; its western connection, the Wilkes-Barre & Eastern Railroad, which extends westward from Stroudsburg, Pa., into the mining district (Wyoming region), was completed in 1893.

Anthracite coal is mined in three regions in the state of Pennsylvania—the Wyoming, the Lehigh, and the Schuylkill. Practically the entire source of supply is confined to an area of 496 square miles, having an extreme distance from northeast to southwest of about 100 miles. The tonnage (in tons of 2,240 pounds) of anthracite coal shipped from the three regions was 3,358,899 in the year 1850, 16,182,191 in 1870, 36,615,459 in 1890, 45,107,484 in 1900, and 71,295,716 tons in 1913. The tonnage shipped has practically doubled since the year 1890. This large tonnage is produced from approximately 302 operations, collieries, and washeries in the three regions.

SURVEY REPORT QUOTED

As stated in publications issued in 1911 by the United States Geological Survey—

> the increase in the production of anthracite bears an approximate relation to the increase in population. This has been particularly marked during the last two decades, or since the use of anthracite for iron making has practically disappeared.

This increase of consumption is limited, however, by the increasing use of gas as fuel and of central steam-heating plants which burn bituminous coal.

The breakers at the collieries reduce the masses of coal from the mines into the various sizes used for domestic and commercial purposes. Washery operations have in recent years recovered from the culm banks and turned into the channels of trade large quantities (approximately 2,500,000 tons annually) of the smaller sizes of anthracite coal. The first washery was installed in the year 1890. Anthracite coal is sold in the market in eight sizes, the size being determined by the dimensions of the meshes of screens through and over which the coal is passed.

The sizes smaller than pea are a by-product in the preparation of domestic sizes. The sizes larger than pea are designated "prepared sizes" in the carriers' freight tariffs.

The stove and chestnut sizes are in the greatest demand and constitute 40 per cent. of the total shipments. They are essentially sizes for domestic use. Egg size is used largely in the furnaces of residences, as is also the pea size, and the latter also is used extensively in kitchen ranges. The smaller sizes come directly into competition with bituminous coal and are used largely in eastern cities in hotels, apartment houses, and office buildings. The sizes larger than pea size constitute approximately 61 per cent. of the total tonnage shipped.

It is apparent that anthracite coal is principally a domestic fuel. Its selling price at tidewater (the wholesale price obtained by the operators) shows a very definite upward trend during recent years, 34 to 49 per cent. during the past thirteen years.

Anthracite coal is consumed in a very broad market, geographically speaking.

Since this fuel is produced by separating the mine output into eight standard sizes, all these sizes must be produced at the same time. In certain months of each year, however, the consumption of domestic sizes is greater than in other months, and the market demands for the steam sizes in some months exceed and in other months are less than the normal production. Therefore, if the collieries operate continuously, some of their product must be stored. In past years, to meet this situation, anthracite was quite extensively stored in the carriers' cars for long periods, for which no demurrage charges were assessed,and some of the carriers constructed large and costly storage plants. These plants were equipped with conveyers, engines, electric machinery, and with structures to cover the coal, and the cost ranged from $23,000 to $600,000 each. The carriers also constructed a large number of retail delivery trestles at various points on their lines of railway. A large number of the storage plants and trestles are, under leases from the carriers, devoted exclusively to the business of the coal companies controlled by the carriers.

These carriers are to a large extent interested in the mining and sale of anthracite coal through their affiliations with or their control of separately incorporated coal companies. Two of the carriers, the Delaware, Lackawanna & Western Railroad and the Delaware & Hudson Company, own coal lands and conduct mining operations.

THE LARGE COAL COMPANIES

The Lehigh Coal & Navigation Company owns a large portion of the railway lines operated by the Central Railroad Company of New Jersey. Under leases and agreements entered into during the years 1871 to 1883, to remain in effect for 900 years, the Central Railroad of New Jersey operates the railroads so leased, and the navigation company is obliged to ship 75 per cent. of its output over the leased railway lines. The navigation company is not controlled by the Central Railroad Company of New Jersey.

The Delaware, Lackawanna & Western Coal Company was organized in 1909. Under an agreement in writing entered into at that time it ships and markets all of the coal mined by the Delaware, Lackawanna & Western Railroad Company. At the time the coal company was organized the Lackawanna Railroad paid an extra dividend of $13,000,000 to its stockholders, and its stockholders were accorded the privilege of purchasing the $6,500,000 stock of the Delaware, Lackawanna & Western Coal Company. Most of them availed themselves of that privilege.

The Lehigh Valley Coal Sales Company was organized in 1912 and commenced business on March 1, 1912, and under an agreement in writing it ships and markets all of the coal mined and purchased by the Lehigh Valley Coal Company. The coal sales company issued $6,060,800 in stocks, giving the shareholders of the Lehigh Valley Railroad Company the privilege of purchasing the stock. At the same

time the Lehigh Valley Railroad Company paid an extra dividend of $6,060,800 to its shareholders to provide them with the funds to purchase the stock of the coal sales comapny.

The Reading Company, a holding company, owns the entire capital stock of the Philadelphia & Reading Railway Company and the Philadelphia & Reading Coal & Iron Comapny.

With these exceptions, the stocks of the coal companies that ship the largest portion of the total tonnage of anthracite coal shipped over the railway lines of the several initial carriers are owned by the carriers.

RATES ON ANTHRACITE COAL

Generally speaking, all the collieries on the lines of any one of the initial carriers in each region are, under the schedules of rates established by the carriers, covered by blanket rates to a particular destination; that is, the several collieries in each region are placed in one group taking the same rate, although the distance between the collieries in the group may be 50 miles more or less. To many important groups of destinations also the rates via any given line are frequently the same; that is, they are blanketed from all the regions reached by that line. Exceptions to this rule apply principally to local short-haul rates.

Joint rates are in effect via all lines to Chicago, Peoria, Joliet, and East St. Louis, the gateways to points west of official classification territory. The proportion of such joint rates that accrues to the lines east of Buffalo is $1.75 per ton (2,240 pounds) on all sizes, such proportion being 25 cents per ton lower than the carrier's local rates on prepared sizes to Buffalo. To other points in central freight association territory the rates generally are based on combination of the local rates to and beyond Buffalo; but the Erie publishes rates to points on the line which it operates, extending westward to Marion and Dayton, Ohio, and the Pennsylvania publishes rates to points on its own line and to points on its affiliated lines extending to Chicago and St. Louis. The rates of the Erie and Lehigh Valley to Buffalo on anthracite coal destined for reshipment over Lake Erie are 25 cents per ton higher than their local rates to Buffalo. Joint rates have been established to Montreal, Ottawa, and a few other Canadian points; to other Canadian points the rates are combinations of the rates to and beyond the lake ports.

Through rates to New England points are made via New York City, the Poughkeepsie bridge, and the Albany gateways, and are influenced to a large extent by the rates to tidewater for reshipment, plus the rates beyond the tidewater ports by rail or by water to points in New England.

RATES TO TIDEWATER

For many years a large number of the independent operators sold their anthracite coal production at the mines to the carriers, or to their allied coal companies, in accordance with the terms of "percentage contracts." Instead of a fixed money price per ton, it was provided in the contracts that the independent operator who so sold and delivered his coal f. o. b. cars at the mines should receive a certain per cent. of the average price at which that grade of coal was sold in the tidewater market of New York harbor. These contracts have been considered at length in the decision of the Supreme Court in the *Reading Company* and *Temple Iron Company cases*, 226 U. S., 324.

The percentage of the tidewater selling price paid to the operators on prepared sizes of coal was, in the early years, about 40 per cent. It gradually increased in later years, reaching 50 and 55 per cent. in the eighties, 60 per cent. in 1892, and 65 per cent. on November 1, 1900. The contracts were commonly designated as 60 per cent. contracts, 65 per cent. contracts, etc. The remaining portion of the selling price of the coal, 40 or 35 per cent. in the more recent years, was the freight rate which the carriers charged the individual operators who elected to ship their own coal production to tidewater. The percentage freight rate was also applied on anthracite coal shipped to Buffalo in the early days. In 1882 the Reading Railroad's rate on anthracite coal to Buffalo was 57 per cent. of the selling price at Buffalo.

In July, 1901, several of the carriers took action to establish fixed or flat rates to tidewater. There is here presented a condition wherein carriers who were also dealers, not in their capacity as carriers but as dealers in the commodity, through the agency of the Temple Iron Company, established rates on anthracite coal for all shippers to tidewater. The Supreme Court in the *Temple Iron Company case*, 226 U. S., 348, recently held that the Temple Iron Company, to whom these carriers in the manner described delegated the power to fix rates, was an agency used by several of these carriers for the unlawful purposes of gaining a monopoly of sale of anthracite coal in the markets.

ESTABLISH MONOPOLY

It has been the policy for many years of these carriers to gain a monopoly of the production and sale of anthracite coal. Those whose property they coveted were at their mercy, as they must either pay the toll in freight rates which these carriers chose to exact or accept the price for their product which the carriers or their coal companies elected to pay.

The carriers for many years were allowed a free hand in the institution of freight rates. It is evident that they used that great power not with the view of establishing reasonable freight rates, but with the intent to establish rates on this commodity that were high enough to remove the production of the independent operators from the field of competition with the coal mined by the railroad interests.

IMPORTANCE EMPHASIZED

The importance of this case can not easily be overstated. The record is so extensive as to forbid a review in detail of the character of much of the evidence introduced. After a careful review of the record we are impressed with the inherent unlawfulness of the rates and

practices established by these carriers, which clearly are the outgrowth of past conditions wherein the carriers were producers, shippers, transporters, and vendors of the commodity. If the rates they established for transportation were excessive, it resulted in no hardship to their mining and selling operations because the excessive profits from the transportation services offset the absence of profits in their mining and selling operations, and high rates eliminated the competing shipper from the markets.

If the record in this case were barren of evidence as to income, revenues, and low operating costs resulting from the transportation of this commodity, the mandatory language of the act to regulate commerce would require removal of the unlawful discriminations, preferences, and advantages which have for many years been extended by these carriers to their allied and controlled coal companies and which operate to the prejudice of the individual shippers of this commodity. The conduct of these carriers, extending over a long period of years, in granting to their allied coal companies concessions from, and offsets against, their established tariff rates, presents very strong evidence that the rates on anthracite coal, which these carriers established, are excessive. Their coal companies ship 80 per cent. of the total production, and if a substantial reduction is made in the tariff rates its full effect will fall upon but 20 per cent. of the tonnage shipped. If the great purpose of the act to regulate commerce is to be carried out, we must require that such tariff rates on this commodity shall be established as can be maintained on the shipments of all shippers.

The operations of several of these carriers have for many years produced a very large income for their stockholders. Having these results before us in the *Five Per Cent. case*, 31 I. C. C., 384, we held:

> The financial condition of the various railroads composing the thirty-five systems varies greatly, as disclosed by their net corporate income as well as by their operating income. The condition of some of them is so prosperous that they clearly do not need a higher net income; the condition of others is such as to preclude the expectation of a return upon outstanding capital stock or the possibilty of raising much additional capital without a thorough reorganization.

Several of the respondent carriers have granted the exclusive use of some of their piers, docks, storage plants, retail delivery trestles, and other properties to their allied coal companies at inadequate rental charges and under conditions which consitute substantial discrimination in favor of such coal shippers. The exclusive right to operate certain of the carriers' public docks and piers has also been granted to such coal companies who in operating such properties gain information as to the shipments of their competitors, handled over the docks and piers, which section 15 of the Act to regulate commerce prohibits common carriers from giving to shippers and prohibits shippers from receiving from common carriers. It has often been held that it is the object of the Interstate Commerce Act and the Elkins Act to prevent favoritism by any means or device whatsoever and to place all shippers upon equal terms. We assume the carriers will at once adjust these practices to remove the discrimination and conform with the requirements of the law.

The evidence shows that several of these carriers have in the past declined to establish joint rates for all shippers, while the coal production of their allied coal companies has been accorded an interline movement by means of trackage arrangements and the free transportation to junction points of the coal production exchanged by the coal companies controlled by the carriers. Such a practice is unlawful and is discriminatory in its worst sense, since the discrimination results to the benefit of the carriers. The carriers will be required to establish through routes and to publish joint rates, of which other shippers may avail, such as will neutralize any such undue benefit heretofore enjoyed by the coal operations of railroad ownership.

COMMISSIONER HARLAN DISSENTS

Commissioner Harlan, dissenting, said:

In June, 1911, upon a voluminous record in Meeker & Co. v. L. V. R. R. Co., 21 I. C. C., 129, affirmed in 236 U. S., 412, we condemned the rates on anthracite coal from the Wyoming coal fields of Pennsylvania to tidewater and fixed reasonable rates for the future. Under ordinary circumstances and in the absence of any showing of changed conditions there would be no objection to the acceptance at this time of that basis as a general standard for fixing rates to tidewater, and also as a foundation upon which to construct rates to interior points. But three years later in *The Five Per Cent. case*, 31 I. C. C., 351, and upon an exhaustive showing of their financial condition by all the carriers operating in official classification territory, we found, becasue of the growing increase in operating costs, interest values, and for other reasons, that the carriers in that territory were in need of additional revenues. Upon that finding and in a subsequent supplemental report in the same proceedings, 32 I. C. C., 325, we authorized in that territory an increase by 5 per cent. in the general level of rates on practically all traffic. The rates on anthracite coal were excepted, as expressly stated in the report, because those rates were under consideration on the record before us here. In dissenting to the supplemental report (id., p. 332), I explained that I was unable to accept the principle that a horizontal increase in rates was lawful without some further test as to the reasonableness of the rates so constructed; and I expressed the view that by following the suggestions of the original report the carriers could procure the required revenue and at the same time would put their general rate structure on a sounder and more satisfactory basis and eliminate from it the inconsistencies and discriminations then admitted to exist, many of which, as illustrated by the record before us in this case, have not since been removed. Nevertheless, the Commission having authorized a general horizontal increase of 5 per cent. with respect to practically all other traffic, it seems to me inconsistent, if not discriminatory, now to take

the level of rates, prescribed three years previously in Meeker & Co. v. L. V. R. R. Co., *supra*, as a basis for rates in the future on anthracite coal without taking into consideration the advances allowed in the general rate structure throughout this territory in *The Five Per Cent. case*. In view of the course ultimately taken in that proceeding no commodity should be relieved from bearing its proportion of the increased revenues found to be required.

In my judgment the record before us here justifies a modification of many of the present rates, but for the future a rate structure on anthracite coal based upon the general standard of the *Meeker case*, surcharged, so far as that would result in a reasonable rate schedule, with the 5 per cent. increase that has been imposed in *The Five Per Cent. case* upon substantially all other traffic in official classification territory would seem to be a more consistent disposition of the case.

PROMISES DRASTIC MOVE

Commission Threatens to Take Criminal Action Against Carriers

In the matter of rates, divisions, rules, regulations, and practices governing the transportation of railroad fuel and other coal the Commission's finding is summarized as follows: The character of a shipment and not formal incidents, such as billing, determines the rate and divisions applicable. The rates and divisions to points of actual destination must be applied to railway fuel coal shipments here involved, and the application of rates and divisions to fictitious billed destinations is unlawful and can not be justified by the theory that such rates and divisions would be proper rates and divisions to the average point of actual destination.

A railroad company as shipper is entitled to the same consideration as any commercial shipper and no more, even when the shipment moves in part over the rails of such railroad company. It follows that in such case the carrier is entitled to a division of the joint through rate. But the division must be fixed by the same considerations which would determine divisions upon a through commercial shipment in which the railroad had no interest other than that of carrier. The divisions now received out of the joint rate on supply coal by the Seaboard Air Line, the Atlantic Coast Line, and the Charleston & Western Carolina Railway Company for the hauls from their junctions are special and abnormal divisions.

The Commission may fix divisions when a railroad company is the shipper or is owned by the shipper so that the division of a through rate might be the means of indirectly reducing transportation charges or effecting discriminations. Divisions here involved will not be fixed by order at this time, but carriers will be expected to adjust them to meet views herein expressed.

The Commission may order that such divisions be filed with it and it is so ordered as to the divisions applicable to fuel coal shipments herein involved.

The question of the proper method of handling fuel-coal rates and divisions is an old one and the Commission is impressed with the fact that some of the carriers have not endeavored to meet the views heretofore announced. We shall therefore look with great care to the steps taken by the carriers to meet the views herein set forth, and the next time we have to deal with a situation like that here presented we will do so under the criminal provisions of the act.

INCREASE WESTERN RATES

Recent Decision Allows Increases in Coal and Coke Rates

Much interest is shown in the Western Rate case in which a decision was handed down recently. Coal and coke are the only mineral products affected. The Commission said with reference to these products:

"From the facts of record we are of opinion and find that, with the exception of rates on coal to points in South Dakota, the proposed increased rates on coal have been justified, and the orders of suspension relating thereto will be vacated."

The increase of rates affects bituminous coal from mines in Indiana, Illinois, Kentucky, Alabama, Missouri, Arkansas, Oklahoma,Kansas, Colorado, New Mexico, and Iowa, and from the docks on Lake Michigan and Superior when shipped to points in western trunk line and southwestern tariff committee territories. Some reductions are made. The increases are either 5 or 10 cents per ton. The increased revenue is 5.36 per cent. of the former revenue on bituminous coal.

MUST PAY DEMURRAGE

Plymouth Coal Company Loses Case Brought Against Lackawanna

In the case of the Plymouth Coal Co. *v.* Delaware, Lackawanna & Western R. R. Co. the Interstate Commerce Commission held that the defendant's demurrage regulations governing anthracite coal awaiting transshipment at or near tidewater at Hoboken, N. J., is reasonable.

The Plymouth Coal Co., of Wilkes-Barre, Pa., has mines at Plymouth and Luzerne, Pa., in the Wyoming anthracite coal reigon. It attacks the demurrage regulations governing anthracite coal awaiting transshipment at or near tidewater at Hoboken, N. J. These regulations provide that all cars containing anthracite coal consigned to and held at Hoboken, including Secaucus, N. J., a point some 3 or 4 miles from Hoboken, and there transshipped by water or reconsigned, will be subject to demurrage, computed on the average plan, allowing an average detention of five days per car free of charge, and that demurrage would be charged at the rate of $1 per car per day for detention in excess of the five days.

The complaint was dismissed.

Mineral Land Decisions

Covered by Old Entry

Instructions just have been issued to the Commissioner of the General Land Office by the Secretary of the Interior as follows:

With regard to patentability of Big Oak Flat No. 1, lode mining claim in the Sacramento Land District of California, which was included in the mineral entry made January 14, 1915, by the Central Land & Trust Company, you are advised that all else being regular the mining claim referred to must be held to be patentable.

The claim was located in 1878. Field investigation discloses that a valid discovery of mineral has been made upon the property and that the requisite amount of improvements have been placed upon it. It appears that at the date of the withdrawal the claim was in all respects valid. The question of present patentability of the claim arises from the fact that the order of withdrawal antedated the filing of the application for patent and the making of proof and payment.

The order of withdrawal applies only to public lands of the United States and hence is inoperative with respect to an area included in a mining location existing at the date of the order.

In view of the purposes and provisions of the act the Secretary of the Interior expresses the opinion, that patent should not be issued on the entry until the grantees under the act shall have been given notice and afforded an opportunity to make such showing as they may desire.

Utah Entry Cancelled

Cancellation of a mineral entry by Earl Douglass at Vernal, Utah, has been sustained by the Secretary of the Interior.

The land in question contains fossil remains of prehistoric animals. The record discloses that such fossil remains have been excavated for uses in scientific investigation.

The Commissioner of the General Land Office held that such a claim is not subject to entry under the mining laws of the United States.

Lindley on mines lays down the following rules for determining the question as to whether the character of the land is mineral or not:

"The mineral character of land is established when it is shown to have upon or within it such a substance as: (a) Is recognized as mineral according to its chemical composition by the standard authorities on the subject. (b) Is classified as a mineral product in trade or commerce. (c) Such a substance (other than the mere surface which may be used for agricultural purposes) as possesses economic value for use in trade, manufacture, the sciences or in the mechanical or ornamental arts."

The material here claimed is not recognized as mineral by standard authorities on the subject, it is held by the Commissioner. It is not classified as a mineral product in trade or commerce nor does it possess economic value. Therefore it is held that the land is not mineral within the meaning of the public land laws.

The decision in the South Dakota Mining Company v. McDonald is said to hold in this case. A paragraph from this decision reads: "Land not shown to contain deposits, in paying quantities, of any of the mineral substances usually developed by mining operations, but which appears to be valuable and to be desired by the parties attempting to secure title thereto chiefly because of a cave or cavern, the entrance to which is situated thereon and for the crystalline deposits and formations of various kinds, such as stalactites, stalagmites and geodes found therein, which are made the subject of sale by the parties, not as minerals but as natural curiosities, is not mineral land within the meaning of the laws."

Based on this decision the Secretary of the Interior holds that the Commissioner is correct in ruling that the land is not mineral within the meaning of the law.

Forest Reserve Mill Site Valid

Cancellation of the mineral entry of James W. Nicol near Waterville, Wash., has been disapproved by the Department of the Interior.

The property in question is known as the Lightning lode and mill site. The Lightning mill site was located November 10, 1913. It is within the Chelan National Forest. It has been continually within this reserve since 1908.

Mineral lands in national forests were made subject to location and entry in 1897, but mill sites are not located or entered as mineral. On the contrary, land entered as a mill site must be shown to be non-mineral in character. As this mill site was located subsequent to the reservation of the land as a part of the national forest the entry is held invalid, so far as concerns the mill site.

The Lightning Lode claim embraced in the same application was located February 5, 1900.

The purpose and intent of the Act of 1897 was to permit the mineral development of the public lands within national forests. The mineral lands were made subject to entry under the exisitng mining laws of the United States. As an element of the mineral development of these lands it is necessary that the lode locator should be permitted to have the right to locate and purchase a mill site. The right to locate a mill site is one guaranteed by the existing mining laws and is an incident under the facts in

this case dealing with the right to make mineral entry. By necessary implication the law confers the right to locate or purchase a mill site in connection with a lode claim within a national forest. The Department also understands that the practice of the General Land Office previous to the decision here in question has been in harmony with the above view and similar mill sites have been patented. As a result the decision of the Commissioner is reversed and the mineral entry will be passed to patent.

Denies Petition

In the case of Alfred W. Hare and Bert Harris, who protest against the desert land entry of Lester B. French, the Commissioner has denied a petition for certiorari. The land in question is in the Los Angeles, California, land district. The protest alleges that it contains a deposit of beauxite carrying alumina or aluminum oxide or about 12½ per cent. of pure aluminum metal. For this reason it is claimed that the land is more valuable for mineral purposes than for any other purpose.

At a hearing local officers held that clay found upon the land is not commercially valuable for the alumini it contains. The Commissioner affirmed the action of local officers and dismissed the protest subject to the right of appeal. Due notice was given but the appeal was not filed within the time required by the rules of practice. One was filed later, however.

The Commissioner, while not required to do so, transmitted the entire record with the petition. The record and the exhibits filed with them have received thorough examination and consideration, but the Secreatry of the Interior holds that there is no reason apparent for disturbing the action already taken to the effect that the preponderance of evidence fails to show that the mineral contained on the land be extracted at a cost which would justify its exploration. Clays of the character described or even those containing a much larger percentage of alumini exist in large quantities in different parts of the United States, but so far as is known it has not been found commercially valuable to work such clays for the extraction of the mineral contained.

Modifies Decision in Arizona

In the case of the Montezuma Coal and Silver Mining Company, the Secretary of the Interior has modified the decision of the Commissioner of the General Land Office.

The Montezuma Coal and Silver Mining Company claims to be the successor to the patentees of various mining claims in the Phoenix mining district of Arizona.

The claims in question were located in the seventies. In 1901 it was alleged that there were mistakes in the surveys in some of the claims and that the grant described in the patents were not the same lands as defined by the monuments on the ground.

The company in filing new surveys asked that the original patents be recalled and that new patents be issued giving a proper description of the ground held and owned by it. The application was denied by the Commissioner, and on appeal the Department held that the company might surrender its outstanding patents, reconvey the land and institute patent proceedings anew as the basis for the issuance of corrected patents. It was stated that failing in this the Commissioner's denial of the petition would stand affirmed. This decision was adhered to on review August 19, 1902.

Following this the company proceeded anew and applied for another official mineral survey of the claims. These surveys were made and returned in 1903. Many of the courses and distances vary more or less widely from those laid down on plats made in 1901.

In 1904 the company filed in the Prescott Land Office three mineral applications based on the latest surveys. In 1906 these papers were called up to the General Land Office. In 1914 these dormant applications were turned up for consideration by the Commissioner and the claimant company was required to show cause why they should not be rejected. The company responded with the petition asking that some mineral surveyor be directed to go upon the ground and ascertain the correct identity of the claims and the land covered by the locations and that correct descriptions be incorporated in new patents. The General Land Office declined to repoen the case.

The legislative intent is held to be that an entry in error because of erroneous description may be cured even after patent, upon the surrender of the outstanding instrument and the relinquishment of title thereunder and the entry be changed to the land intended to be entered if still unsold.

The Department at this time contends that it is unable to formulate a description for patent purposes owing to various discrepancies in service.

A further survey is held to be essential.

This survey should be applied for by the company and made at its expense. It should be executed, the Department declares, with primary stakes and monuments established and described in a survey of 1884. This mandatory survey if found correct and in all respects satisfactory should be approved by the Surveyor General. Thereupon a transcript and plat thereof should be prepared for filing in the General Land Office. Upon the descriptions contained and returned in such a survey new patents could be issued, giving an accurate and precise description of the land to which the company is entitled and this without the necessity of further notice or new application proceedings.

The company accordingly is granted a reasonable time within which to apply for the requisite mandatory survey.

Posting and publication must be had and the applications to entries made in the usual course. In the event the company fails to act its petition will stand denied and the pending applications will stand rejected.

Montana Coal Lands

Instructions have been issued by the Department of the Interior to the Commissioner of the

General Land Office in regard to the Crow Indian coal lands as follows:

The price for lands within the former Crow Indian reservation in Montana was fixed at $4 an acre when entered under the Homestead law. As to lands entered under the mineral land law the law provided that the price should be that fixed by existing law, but in no event less than that fixed for lands entered under the Homestead laws.

By promulgation of September 9, 1910, the President directed that all the unentered non-mineral unsurveyed lands in this tract be sold at public auction at a price not less than $2 an acre. The purchaser of each tract was required to pay one-fifth of the price down and the remainder in four equal annual instalments.

Certain lands were designated not to be sold as they were coal in character. Fifty-seven tracts which were sold at the first sale were reported later by the Geological Survey as containing coal. They were classified in 1913 as coal land and the price fixed at from $10 to $30 an acre. The question which arose immediately was whether final title should be issued with the reservation of the coal deposit to the United States or was to be issued without such reservation. The United States in offering these lands for sale had classified the areas into non-mineral and mineral. The lands involved were offered for sale as non-coal and were purchased upon that basis. It would seem therefore as a matter of fair dealing the Department holds the sale so made should be consummated in the regular manner.

It is the view of the Department that the purchaser is entitled to an absolute patent as there was no known-coal under the tracts at the time of purchase. The law authorizes the President to dispose of the lands remaining unentered upon such terms and conditions as he sees fit. There is ample authority granted by Congress to dispose of the land, even if coal, upon such terms as may be deemed advisable. Even assuming that undre the law it might be within the power of the Department to require these purchasers to take a limited patent under the circumstances of the sale in which the tracts were offered by the United States as non-mineral it is held that absolute patents should be issued.

CHICAGO INCREASE JUSTIFIED

Other Points Also Must Pay Additional 25 Cents on Gross Ton

A few days after the decision in the anthracite coal cases, the Commission handed down its ruling in the matter of anthracite coal rates to Chicago and other points from Pennsylvania mines. The Commission justified an increase of 25 cents per gross ton on the prepared sizes to Chicago and all points taking Chicago rates. Connecting points between eastern and western mines near Chicago, such as Joliet and Kankakee, also were included. This also applies to more distant connecting points, such as Peoria, East St. Louis, and St. Louis.

Chairman McChord, of the Commission, rendered the opinion. He said, in part:

"The all-rail movement of anthracite coal to Chicago is annually about 2,500,000 tons, and the movement by water in 1913 was 1,083,712 tons.

"Anthracite coal is not sold f.o.b. at the mines, but at such a price per net ton in Chicago as preserves to the producer of coal the advantage of the 25 cents, so that the producer realizes more profit on the through shipments to Chicago than on the local shipments to Buffalo or on the through shipments to points between Buffalo and Chicago. The service at Buffalo is the same as to coal hauled to Buffalo consigned to Chicago at the proportional charge of $1.75 as to coal hauled to Buffalo consigned to points west in Ohio, Indiana, and Michigan. The Pennsylvania R. R. Co. and its affiliated line, the Pennsylvania Co., hereinafter referred to as the Pennsylvania, publishes no through rate via its Buffalo route. The Erie R. R. Co. and the Chicago & Erie R. R. Co., operating jointly, hereinafter together referred to as the Erie, maintain only one rate to Buffalo, which is $2, regardless of the destination of the shipment all rail. The Erie, since this proceeding was begun, established through rates of $3.50 from the mines to Chicago and $4 from the mines to East St. Louis and St. Louis via Buffalo and the Niagara frontier, not having heretofore published such a rate, but expects to file a tariff increasing these rates to $3.75 and $4.25, respectively, in line with the general policy of respondents as disclosed on this record. The mean distance from the mines to Buffalo on the Erie R. R. is about 288 miles. From Buffalo to Chicago the short-line distance on that railroad is about 550 miles.

"The record deals primarily with Chicago conditions and the rates to Chicago, because the protestants who appeared at the hearing were coal dealers either at Chicago or at points to which the rate is a combination of the rate to Chicago and the rate from Chicago to the place of destination.

"The entire increase of 25 cents is apportioned as compensation for that part of the through haul between the mines and Buffalo on shipments via Buffalo on the lines running to Buffalo, so that on such shipments carriers will receive no increase for that part of the through haul between Buffalo and the named points of destination, and the rate to Buffalo will be uniformly $2, regardless of the destination of the shipments. But as to shipments moving west, not via Buffalo, over the Erie or Pennsylvania railroads, which extend by their own rails from the mines to Chicago, the increase is necessarily apportioned over the entire mileage from the mines to Chicago.

"Respondents assert that they have proposed the increased rates in view of a complaint that certain discriminations against dealers in and consumers of anthracite coal

in Ohio, Indiana, and Michigan have been created by the effective rates. Protestants admit the existence of the alleged discrimination, but insist that the only proper way to remove it is by a reduction of the rates to points in Ohio, Indiana, and Michigan, as to which it is alleged that the Chicago rate is unjustly discriminatory, it being urged that the increased rates are unreasonably high.

"This issue is determined by our finding in the *Rates for Transportation of Anthracite Coal, supra,* where a rate of $2 per gross ton was found to be reasonable for the haul from the mines to Buffalo. Nothing has been made to appear here that would warrant our requiring the trunk-line carriers to accept less revenue on the transportation here involved than they receive on like transportation to the intermediate points in Ohio, Indiana, and Michigan. Whether or not the rates under consideration are properly divided between the carriers east of Buffalo and those west thereof is a matter not raised on this record.

"The rates here involved have been justified."

OAK HILLS RATE DECIDED

Divisions Arranged After Carriers Fail to Agree on Them

The long expected decision in the matter of coal rates from Oak Hills, Colo., has been handed down by the Interstate Commerce Commission. This proceeding is supplementary to a former case which was decided last year. The original report required the establishment of rates of bituminous coal from Oak Hills, Colo., on the Denver and Salt Lake Railroad, through Denver, to stations on the Chicago, Rock Island & Pacific Railway.

The carriers failed to agree upon the divisions of the joint rates. The official carrier consequently petitioned the Commission to make an order prescribing just and reasonable divisions for each of the carriers.

In its ruling the Commission says in part:

"Our original report required the establishment, September 1, 1914, of joint rates on bituminous coal from Oak Hills, Colo., on the Denver & Salt Lake Railroad, hereinafter called the Moffat road, through Denver, to stations on the Chicago, Rock Island & Pacific Railway, hereinafter called the Rock Island, in Kansas, Nebraska, and Missouri. The rates prescribed were on the basis of the rates then in effect from the Walsenburg, Colo., coal district by way of Pueblo and the Rock Island to the same destinations. The report concluded as follows:

"'It is the expectation of the Commission that the Moffat road and the Rock Island will be able to agree upon divisions of such rates. No opinion is expressed here as to the reasonableness of the divisions which the Rock Island asks east of Denver, nor of the divisions which the Moffat road offers to the Rock Island.'

"Upon all of the facts of record we find that the Moffat road is entitled to divisions on coal, soft, all kinds but nut, slack, and pea, of $1.18 per ton, and on coal, soft, nut slack, and pea, of $1.12 per ton, on shipments to all destinations on the line of the Rock Island in Kansas, Nebraska, and Missouri shown in Moffat road tariff I. C. C. No. 20."

ASKS OUTLET SOUTH

Utah Company Makes Plea for Through Route to San Diego, Calif.

Several interesting facts with regard to the coal rate situation in Utah are developed in a brief submitted to the Commission by the Consolidated Fuel Company of Salt Lake City.

This company instituted proceedings against the Atchison, Topeka & Santa Fe Railroad, for the purpose of obtaining a through route and joint rate on coal from the mines of the plaintiff in the Castle Gate District, Carbon County, Utah, to points beyond Los Angeles.

Futile efforts had been made to get the railway company to provide a through route and joint rate on Utah coal to San Diego. This would be necessary to secure tariff parity with coal from New Mexico points to the same destination.

OREGON COMPANY LOSES

Columbia Gold Mining Company Must Pay Combination Rate on Oil

In the case of the Columbia Gold Mining Company, of Sumpter, Ore., against the Oregon-Washington Railroad and Navigation Company the gist of the Commission's decision is as follows:

"Cancellation by Oregon-Washington Railroad & Navigation Co. of a joint rate on ore and concentrates in carloads from Baker, Ore., through Portland, Ore., to Tacoma, Northern Pacific Railway from Portland, leaving applicable a combination rate based on Portland higher than the rate canceled and also higher than the rate applicable on the Oregon-Washington Railroad & Navigation Co.'s through line is found to have been justified. The complaint was dismissed."

A portion of the report of the Commission says:

"The Columbia Gold Mining Company, by complaint, filed April 18, 1914, alleges that the defendants' rate for the transportation of ore and concentrates in carloads from Baker, Ore., to Tacoma, Wash., is unreasonable.

"Complainant's ore and concentrates are transported from its mine to Sumpter by wagon and thence by the Sumpter Valley Railroad, a narrow-gauge line, 28 miles to Baker on the Oregon-Washington Railroad & Navigation Co.'s line to Tacoma. As the rate to Baker is not involved, the shipments in controversy may be considered to originate at Baker.

"Prior to 1910 the Oregon Railroad & Navigation Co., the predecessor of the Oregon-

Washington Railroad & Navigation Co., hereinafter called the Oregon-Washington Co., did not operate between Portland, Oreg., and Tacoma, and for a period of 13 or 14 years previous to 1910 maintained a joint rate of $5.50 per net ton on carload shipments of ore and concentrates from Baker to Tacoma in connection with the Northern Pacific Railway beyond Portland. Prior to July 6, 1909, this rate applied on ore and concentrates worth not more than $100 per ton. In 1910 the Oregon-Washington Co. extended its operations by trackage arrangements with the Northern Pacific from Portland to Tacoma and established the same rate from Baker to Tacoma over its own line as applied in connection with the Northern Pacific. The plant of complainant's consignee at Tacoma is located on the tracks of the Northern Pacific, but under a proper tariff provision the Oregon-Washington Co. absorbed the switching charges so that the cost of transportation paid by complainant was exactly the same over either route. On April 4, 1914, the Oregon-Washington Co. canceled the joint rate described with provision for the application of the combination rate based on Portland, $9 per ton, value not exceeding $200 per ton. The $5.50 rate over its own line and the provision described for the absorption of switching charges at Tacoma were continued and are still in effect. The cancellation of the joint rate represents an increase in the rate involved subsequently to January 1, 1910. The principal issue is whether the joint rate should be restored.

"Complainant apprehends that some future change may require it to pay the terminal switching charge at Tacoma in addition to the present through rate, contending that the absorption of switching charges, although plainly provided for by tariff, is in direct contravention of law. Section 6 of the act to regulate commerce provides that carriers' tariffs shall—'* * * state separately all terminal charges * * * and all other charges which the Commission may require, all privileges or facilities granted or allowed, and any rules or regulations which in any wise change, affect, or determine any part or the aggregate of such aforesaid rates, fares, and charges, or the value of the service rendered to the passenger, shipper, or consignee. * * *

"'The Commission may determine and prescribe the form in which the schedules required by this section to be kept open to public inspection shall be prepared and arranged and may change the form from time to time as shall be found expedient.'

"Pursuant to the authority conferred by this section we have provided by rule 103 of Tariff Circular 18-A that—

"'If part or all of the charges of a terminal or switching road are to be absorbed by a connecting road, the tariff of such connecting road must specify that its rate includes originating or delivery services by the terminal or switching road, and that the connecting road will absorb the charges of such terminal or switching road in a specified sum, or as per the current tariffs of the terminal or switching road (naming it) as on file with the Interstate Commerce Commission.'

"This rule has been followed by defendants in publishing the tariff under which the Northern Pacific's switching charges at Tacoma are absorbed by the Oregon-Washington Co.

"Upon all of the facts of record we find that it was not unlawful for the Oregon-Washington Co. to cancel the joint rate involved and that defendants have justified the increased rate assailed."

Midcontinent Oil Rates Fixed

In its decision with regard to Midcontinent oil rates in the case of Milliken Refining Co. *v.* Missouri, Kansas & Texas Ry. Co., the Commission fixed reasonable rates on petroleum, oil and its products from the midcontinent oil field, in Kansas and Oklahoma, to Kansas City, St. Louis, Chicago, and various other points.

All points in the midcontinent field were grouped with respect to rates to the Mississippi River and points beyond, including St. Paul territory, Winnipeg, Salt Lake City, and Denver.

Reasonable maximum rates were prescribed on low-grade products from midcontinent points to St. Louis and Chicago.

To Hear Colorado Case

The case of the Colorado Fuel Company *vs.* Missouri, Kansas & Texas and the Colorado Southern Railway, and the Oklahoma Fuel Company *vs.* the Missouri, Kansas & Texas, will be the subjects of a hearing in Wichita, September 16, before Examiner Wilson.

A hearing has been assigned for September 9 at Washington in the matter of coal and coke from points on the Louisville & Nashville to points on the Big Four.

Coal rates from Virginia mines and coke rates from Virginia points also will be considered at this hearing, which will be before Examiner Gartner.

INCREASE ALLOWED

Bituminous Coal Rates in Southeast are to be Higher

In the matter of bituminous coal and coke rates from mines and ovens in Alabama, Illinois, Kentucky, and Tennessee to Mississippi River crossings and various junction points in Tennessee, Mississippi, and Louisiana, the Commission holds that the proposed increased rates on coal to New Orleans, La., Memphis, Tenn., Greenville, Natchez, and Gulfport, Miss., Baton Rouge, La., and certain other points in Mississippi and Louisiana are justified.

Proposed increased rates on coal to Jackson, Vicksburg, Newton, and certain other points in Mississippi and Tennessee are not justified. Increased rates to Vicksburg from Illinois and Kentucky are justified.

Certain increases as shown herein to Meridian and other Mississippi points, and to Jackson, Milan, and other points in Tennessee are justified.

Increased rates on coke to Mississippi Valley points are justified.

Find Pig Iron Rate Unreasonable

In the case of the Sloss-Sheffield Steel & Iron Co., et al., versus the Louisville & Nashville Railroad Co., the Commission held that:

The rates on pig iron in carloads from points in Alabama and Tennessee to points reached by defendants' lines in central freight association territory, to which pig-iron rates were not reduced on October 1, 1914, are unreasonable. Reasonable rates are prescribed for the future.

Divisions of such rates between the carriers operating north and those operating south of the Ohio River, are prescribed.

Vulcan Gold Case Up

A hearing has been assigned by the Commission to take place in St. Louis October 1 before Examiner Wilson. Among other cases is a complaint of the Vulcan Coal & Mining Co. against the Illinois Central R. R. Co. which will be considered.

Claim Failure to Reconsign

A complaint has been filed with the Commissioner by the Middle West Coal Co. *vs.* Chesapeake & Ohio R. R. Demurrage charges were collected, alleged to have been caused by the railroad's failure to reconsign the car promptly.

Ferro-Manganese Rates

Ferro-manganese rates will be discussed at a hearing in Cleveland, September 20, according to an assignment made by the Interstate Commerce Commission. It will be before Examiner Mattingly.

The matter of rates on petroleum production from Kansas points to various interstate destinations will be the subject of a hearing in Cleveland, October 19. Examiner Brown will preside.

CANADA MAKES REPORT ON ALASKA METEORITES

An interesting study of the meteorites in Gay Gulch and Skookum in the Yukon district of Canada, just has been issued by the Canadian Department of Mines. The author is R. A. A. Johnston.

These meteorites were discovered in the course of gold mining operations near Bonanza Creek in the Klondike. They are remarkable for the amount of nickel-cobalt they contain. It is the general belief that they fell in the same shower.

AETNA COMPANY UNDERTAKES EXPERIMENTS WITH GASOLINE

Concern Which Has Been Trying Out Rittman Benzol Process Makes New Contract with Bureau of Mines

Arrangements just have been completed by Van H. Manning, Acting Director of the Bureau of Mines, with the Aetna Explosives Company, for experimental work with the Rittman process, for the refining of gasoline.

It is a portion of the agreement that all patentable devices be dedicated to the Secretary of the Interior, as trustee of the public, and that no royalty or other perquisite will devolve in any way upon the company.

The satisfactory progress being made by the Aetna Company in its experimental work in the production of benzol by the Rittman method, induced them to undertake the work with gasoline as well.

Mr. Manning emphasizes the fact that no commercial product, in connection with the experimental work, is being manufactured.

WINCHESTER MAKES PRELIMINARY REPORT ON WESTERN OIL SHALES

A preliminary report which is expected to be of considerable scientific importance and of some economic usefulness has been made by D. E. Winchester, who is conducting a party in the oil shale region of Colorado and Wyoming. Distillation tests have been made over a wide area by the use of a portable distillation plant.

He has ascertained, roughly, the oil producing capacity of the shales at numerous points. His preliminary report will be ready for distribution in about six months.

MINING CONGRESS ALWAYS READY TO HELP MEMBERS

Any member of the American Mining Congress is entitled to apply to the Washington office for any service which can be rendered. Matters will be laid before any department or will be taken up with the White House. Oftentimes more can be accomplished by personal interviews than by correspondence.

Washington has a wealth of reference facilities. These are at the service of the members of the American Mining Congress if anyone will acquaint the secretary with his desires.

The staff of the Washington office is always at your service.

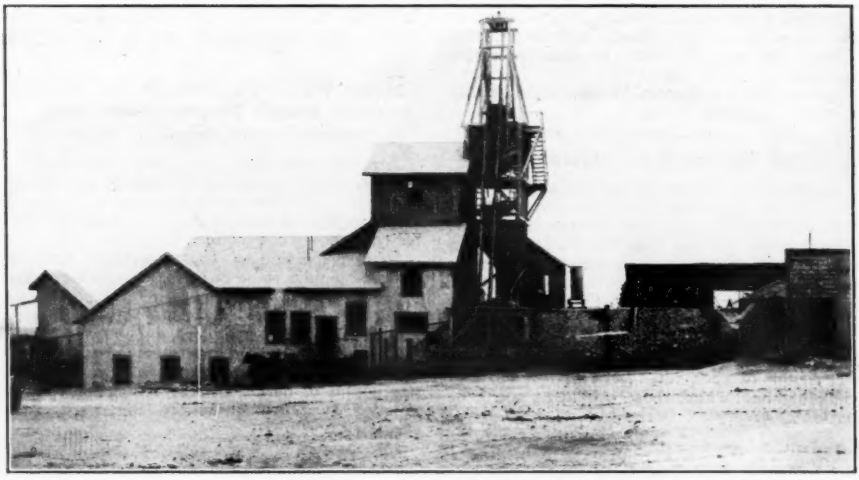

Photo by Frank L. Hess, U. S. G. S.

PANORAMA OF THE PAPPOOSE SHAFT BUILDING, ATOLIA, CAL. THIS IS THE LARGEST SCHEELITE MINE IN THE WORLD. IT IS OWNED BY THE ATOLIA MINING COMPANY

SAMPLES TAKEN OF UINTA POTASH ALONG WHOLE RANGE

Samples have been taken at various places in the phosphate deposits in the Uinta range in northeastern Utah and adjacent Wyoming and Colorado.

A. R. Shultz of the Geological Survey, who has charge of phosphate, potash and metalliferous mineral lands for the Board of Land Classification, just has returned from this work and is engaged in making his report. It probably will be several years before any restoration will be made of Uinta phosphate lands.

While in the West Mr. Shultz visited the land office at Portland, Ore., in connection with certain Northern Pacific lands upon which field work has been begun.

PERMISSIBLE EXPLOSIVES DISPUTE SETTLED QUICKLY

J. R. Fleming, of the Bureau of Mines staff, has received this letter from Wm. Johnson, vice-president of the Oliphant-Wasson Coal Company of Vincennes, Ind., relative to the dispute over the use of permissible explosives in one of the company's mines:

"We reached a settlement yesterday on your strike. The permissible contract was sustained by the National Board and the men ordered to work. This gives us all the contract rights enjoyed by Paxton or any other mine in this field.

"We had ten weeks of idleness in the fight for 'Safety First' but I feel that a great many things besides permissible powder have been settled by this."

NEWHOUSE AND CACTUS MILL NEAR NEWHOUSE, UTAH.

MINERS FARE WELL AS TUNGSTEN PRICES DOUBLE

Big Mines in Boulder County, Colorado, Are Working Full Handed and Full Time

Situation Unnatural, But Present Price Level May Be Sustained if Steel Trade Continues Active

At the outbreak of the European war the American tungsten market was very dull and prices were comparatively low, about $6.50 a unit (1 per cent. of a short ton). The ores mined in Burma, Australia and other countries came into competition with the American ores and many of the prospects were unworked.

DEMAND INCREASES

There is a normal demand for tungsten to be used in "high speed" tool steels, which fluctuates with the steel trade. A smaller, but growing demand, for tungsten for incandescent electric lamp filaments, for electric contacts, wire for dental work, exists. When the orders for shrapnel shells and other war steel began to be filled the demand for high-speed steel for tools with which to turn and bore the shells became very great. Great Britain placed an embargo on the shipment of tungsten ores from every part of the empire so that the Burmese, Australian and New Zealand ores were cut off, and it is said that very little ore has come from Portugal. Following these events, the price rose until $12.50 or more per unit has been paid for ores carrying 60 per cent. or more of tungsten trioxide. Small tonnages of Japanese scheelite, Peruvian hubnerite and some Bolivian wolframite have been coming to this country, but not in lots large enough to disturb market conditions, and the large mines in Boulder County have been working full handed and full time. As with antimony, the users of tungsten have been scouring the country for tungsten ores, and although the price for ores is largely a matter of individual bargaining, in general, the miner has fared well.

DEPENDS ON WAR

The situation is unnatural and depends almost wholly upon the duration of the war, according to the Geological Survey's experts. If at its close the steel business in this country is active, prices may stay near present level, though they will probably be somewhat lower. If the steel business is inactive, tungsten probably will be low.

Lyon Getting Results

D. A. Lyon, of the Bureau of Mines, who has been conducting chloridizing, roasting and leeching processes for the recovery of lead from low grade ores, reports gratifying results.

WALSH CHARACTERIZED AS "PASSIONATE RED"

The following arraignment of Frank P. Walsh appeared in a recent issue of the New York *Times*:

"After two years of labor, costing some $500,000, the United States Commission on Industrial Relations is hopelessly divided in opinion, and utterly discredited in public estimation. Its chairman, Mr. Frank P. Walsh, is the architect of its futility. From the moment that he first opened officially his untiring mouth until now, his course has been one continuous crescendo of prejudice and malice against employers, or self-magnification, of radical and socialistic fury. He has harried and insulted witnesses in his ludicrously styled 'investigations.' He has set drumhead 'investigators' to work on his own hook, and they have 'reported' to him in 'reports' frothing with his rabies against 'wealth,' and he has 'reported' to the public. He has acted as the commission. His proposal that Congress prohibit by confiscatory inheritance taxes fortunes of more than $1,000,000 is but a specimen of his temper and intellectual make-up.

"With the unbiased members of the commission eager to find the facts, approaching them in a candid spirit, to present them uncolored, every fair-minded person must sympathize. Mr. Walsh has his conclusions ready made. He indicts, he prosecutes, he convicts.

"Upon what and whose recommendation, solicitation, or guarantee was this passionate Red appointed to the commission as one of its 'impartial' members, supposed to represent the general public? Who is responsible for Walsh?"

IDAHO MINING ASSOCIATION TO TEST WATER-POWER RULING

The Idaho Mining Association announces its intention to bring suit to determine whether the recent ruling of Attorney General Gregory regarding control of water courses and water power will stand a court test and to carry the case to the Supreme Court of the United States if necessary.

The test case will be instituted by Senator Ravenel Macbeth, secretary of the mining Association, and probably will take the form of an action to file on waters over which the Federal Government has assumed jurisdiction. Later, the association proposes to challenge the right of the Government to withdraw from entry the vast phosphate beds in the southeastern portion of the State.

The mining men of Idaho, who represent practically all classes in this matter, contend that the ruling of the Attorney General is an invasion of the State's right to control waters within its boundaries, particularly as the Bureau has assumed jurisdiction over non-navigable tributaries of rivers, as well as the navigable streams.

Mines More Magnesite

Magnesite, used in making soda-water gas, was produced in the United States in 1914 in much greater quantity than ever before. The production amounted to 11,293 tons. The value of the total output was $124,223.

North Dakota Lignite Output Increases

An increased production of lignite in North Dakota for 1914 is reported by the Geological Survey. Lignite is the only mineral fuel found in North Dakota. Nearly one-half million tons were mined last year.

OUTSTANDING WITHDRAWALS OF LAND TOTAL 58,399,526 ACRES

Over 19,000,000 Acres Have Been Restored During Wilson Administration, Figures Show

A summary of the principal withdrawals and restorations of public lands during the period March 4, 1913, to June 30, 1915, is shown in the following table:

	Outstanding withdrawn March 4, 1913.	Withdrawn during period.	Restored during period.	Outstanding withdrawn June 30, 1915.
	Acres.	*Acres.*	*Acres.*	*Acres.*
Coal	65,410,464	31,390	17,197,580	48,244,274
Oil and gas	4,817,706*	494,711	537,999	4,774,418*
Phosphate	3,367,378	443,932	1,150,934	2,660,376
Potash	133,829	211,384	3,200	342,013
Power site	1,857,258	501,400	162,866	2,195,792
Public water	86,216	98,431	1,994	182,653

* Recomputation of outstanding oil withdrawal in California shows that the previously reported areas should be increased by 140,404 acres.

A summary of enlarged homestead designations for period March 4, 1913, to June 30, 1915, is shown as follows:

States.	Outstanding on March 4, 1913.	Designations during period.	Cancelations during period.	Outstanding on June 30, 1915.
	Acres.	*Acres.*	*Acres.*	*Acres.*
Arizona	26,959,779	1,090,292	3,018,054	25,032,017
California	.....	1,996,598	.....	1,996,598
Colorado	20,365,536	4,520,676	164,050	24,722,162
Idaho, Secs. 1–5	5,497,437	3,038,259	80,591	8,455,105
Sec. 6	10,174	76,940	321	86,793
Kansas	.....	277,605	.....	277,605
Montana	32,046,761	14,802,866	88,814	46,760,813
Nevada	49,512,960	350,629	3,558,392	46,305,197
New Mexico	17,905,694	5,661,122	192,275	23,374,541
North Dakota	.....	8,742,701	3,194	8,739,507
Oregon	11,505,449	6,406,399	975,300	16,936,548
South Dakota	.....	1,756,332	.....	1,756,332
Utah, Secs. 1–5	7,064,397	251,384	168,388	7,147,393
Sec. 6	1,199,638	21,786	2,392	1,219,032
Washington	3,402,896	865,473	251,482	4,016,887
Wyoming	17,591,438	1,202,808	24,596	18,769,650

NOTE—The information contained in the above tables will be brought up to date and published each month in the future.

Smith's Address Being Distributed

A limited number of printed copies of "Practical Ideals," an address delivered by Dr. George Otis Smith, at the University of Illinois, have been printed by the Sigma Xi Society and will be sent on application to Dr. Smith.

PUBLIC FAYS

"Whatever may be the value put on a human life in arranging for a reasonable compensation, these losses of life and labor are national in their extent and character and fall ultimately upon the general public as representing the consumers of mineral products.

"It is important, therefore, not only from a humanitarian standpoint, but also from the standpoint of economics, that everything possible should be done to reduce the loss of life and labor in the mining industry, both through prevention of accidents and through the improvement of health conditions. It is also a matter of decided importance to the public from both the standpoints that these improvements should be brought about at a minimum cost and in a minimum time."

LIBRARIES EXPERIENCE GREAT DIFFICULTIES IN FINDING FULL SETS OF TECHNICAL PAPERS

"Mines, Minerals and Arts," Published in St. Louis Forty Years Ago, Seems to Have Disappeared from the Face of the Earth—Complete Set of the Mining and Scientific Press Seems to be Unobtainable

Between the years of 1872 and 1878 there was published in St. Louis a journal known as *Mines, Minerals, and Arts.* It was a prominent publication of its day. In it appeared many contributions from leading scientists. Of particularly great importance were a number of articles which had to do with the early study of the Missouri zinc district.

For a number of years efforts have been made to find copies of this publication. The country has been combed for a set of this journal without success. It seems to have disappeared from the face of the earth.

This fact calls attention to the necessity of preserving files of technical journals. Many times the value of the articles which make up this class of journal is not recognizable fully until many years after they have appeared. It is of the greatest importance many times to scientists to be able to secure original writings in regard to technical matters.

MINING PRESS INCOMPLETE

Even as prominent a trade paper as the *Mining and Scientific Press*, which began publication in 1860, cannot be secured in its entirety. Even its publishers have not a complete set. Volumes one to nineteen are not in existence in the libraries of Washington or New York. These libraries are supplied with ample funds to purchase these and other missing volumes, but they have been unable to find them.

The *Engineering and Mining Journal* sets are complete in the Engineering library of New York and the Chemists' Club of New York, but few libraries throughout the country have a complete set of even this publication.

The greatest collection of geological literature in the world is that possessed by the library of the Geological Survey in Washington. In conjunction with the Library of Congress, other libraries in Washington, and the libraries in the departments, it forms by far the greatest technical reference unit in the world.

The survey library has made every effort to secure complete sets of the important mining publications but in very few cases has it been successful in locating early numbers.

In more recent years, the Survey has collected with great care every known publication on mining and allied topics. Each year these are bound and arrangements made for their indefinite preservation.

LOCATE ALL TECHNICAL MATTER

The Survey library is gathering lists of the books in other libraries throughout the world and soon will be in a position to give immediate reference as to the location of practically any technical work, paper or report in existence in the world.

Director Smith speaks very highly of the service rendered in this connection by Miss Julia L. V. McCord, the Survey librarian. Much of the prestige which the library has come to enjoy is due to her highly intelligent and persistent endeavor.

VETERAN GEOLOGIST PREPARES TO ROUND OUT EARLIER REPORTS

G. K. Gilbert, one of the senior members of the United States Geological Survey and one of the most distinguished of all American geologists, is devoting himself this season to geological structure in the Great Basin Region, with the view to the preparation of a broad discussion of what is known as "Great Basin Structure," in the investigation of which Mr. Gilbert was a pioneer.

This work, which is expected to round out his earlier reports on the region, is expected to be a classic on its subject in geologic literature.

TENNESSEE SANDSTONE AND COAL SUBJECTS OF STUDY

G. H. Ashley, a geologist with the Geological Survey, is reviewing some points concerning the identity of sandstone and the correlation of coal beds near the western margin of the Cumberland Plateau in Tennessee. This special examination is made in cooperation with the State Geological Survey of Tennessee. The State Survey is represented by Prof. A. H. Purdue, the State geologist, and Prof. L. C. Glenn, of the State university.

Alaskan Report in Press

The annual progress report for Alaska for 1914 will be one of the most interesting documents of this kind ever published by the Alaskan division of the Geological Survey. It covers all the work done during 1914. It is in press, and will be ready for distribution this month.

PERSONALS

Dr. George Otis Smith, Director of the Geological Survey, spent two weeks recently at his summer home at Skowhegan, Me.

H. D. McCaskey, of the Mineral Resources division of the Geological Survey, left the middle of August for an extended trip among those mining camps of the West where the Survey is doing work.

Dr. W. T. Schaller, of the Geological Survay, is studying pegmatite in California. This is the mineral in which tourmalines and kunzite are found. The latter is the finest pink mineral known.

Max W. Ball of the Land Classification Bureau, of the Geological Survey, was married August 18, to Miss Amelia Maeder, of Boulder, Colo.

John R. Cochran, of the staff of the Bureau of Mines, is spending his annual leave in Battle Creek, Mich.

Dr. David White left Washington August 15 on an extended trip of inspection in the regions where field parties are at work.

Professor F. W. Clark, of the Geological Survey, is spending a month in Lovell, Me.

Frank J. Katz, who is working upon the Portland, Me., quadrangle, for the Geological Survey was in Washington a few days last month to complete his statistical report upon abrasives.

Paul Roundy, of the Geological Survey, just has returned from Idaho and Wyoming where he has been doing general geological work in the phosphate region.

David White, chief geologist at the Geological Survey, spent his two weeks' vacation in Brookfield, Mass., last month.

D. D. Condit, of the Geological Survey, has returned from Idaho where he has been engaged in phosphate work.

Prof. J. L. Grasty, of the University of Virginia, spent some time in Washington last month on technical business.

In the absence of Dr. George Otis Smith, Dr. P. S. Smith is acting as director of the Geological Survey.

Mr. William Maloney, Territorial Mine Inspector for Alaska, will sail September 1 for San Francisco to attend the exposition. He expects also to attend the convention of the Mining Congress which is to be held September 20, 21 and 22.

R. B. Marshall, Chief Geologist of the United States Geological Survey, is in California on a general inspection trip of the work being done in the West under the direction of his division.

W. B. Emory, an assistant geologist of the Geological Survey, has joined W. F. Lupton's party, which is examining lands in the Big Horn Basin for the purpose of oil classification.

Charles A. Davis, of the Bureau of Mines, is in Elliott, Me., engaged in field work in the peat beds of that region.

Dr. G. H. Girty has returned from a study of the stratigraphy of the Mississippi rocks in western Kentucky and southern Illinois. He cooperated with Dr. Stuart Weller of the University of Chicago in Illinois in the study of that section.

Van H. Manning, Director of the Bureau of Mines, will leave September 15 for San Francisco where he will spend two weeks.

W. A. Williams, chief petroleum technologist of the Bureau of Mines at San Francisco, was called to Washington last month by the Secretary of the Interior, in connection with the Osage Indian Oil Lands matter.

Sydney Page, a geologist of the Geological Survey, is on a Western trip. He has been in California and is now at Tyrone, N. Mex. He will return to Washington November 1.

PRODUCERS' COAL CO. BUYS DERING PROPERTIES AT SALE

The Illinois properties of the Dering Coal Co. at Westville and West Frankfort have been sold under foreclosure sale to the Producers' Coal Co., a corporation recently incorporated in Illinois with F. S. Peabody as president.

The transfer of the properties was made effective August 15. No disposition has yet been made of the Indiana holdings of the Dering Coal Co.

Mr. Peabody will have entire charge of the management of the new company. He is negotiating with J. K. Dering of the J. K. Dering Coal Co., to continue handling the product of these mines.

Anthracite Output Falls Off

Pennsylvania's production of anthracite coal for 1914 amounted to 81,000,000 tons. The value of this yield was $188,000,000. This represents a slight decrease, as compared with 1913.

GEOLOGISTS WIN RECOGNITION AT SAN FRANCISCO FAIR

Many Medals Awarded Survey for General and Alaskan Work—Publications Take Grand Prize

A silver medal for collaboration has been awarded by the Superior Jury of the Panama-Pacific Exposition to each of the following members of the Geological Survey: A. H. Brooks, J. C. Hoyt, Geo. H. Ashley, Edward W. Parker, S. J. Kubel and Robert B. Marshall.

The complete list of awards by the Superior Jury for the Geological Survey is: Education, Group 12 and Class 37 for scientific investigations, medal of honor; Social Economy, Group 14 and Class 43 for betterment of economic conditions, gold medal; Liberal Arts, Group 29 and Class 101 for black and white copper plate engraving, gold medal; Group 30 and Class 40 for publications constituting a special library on the geology, topography, and mineral resources of the United States, grand prize; Group 31 and Class 112 for maps, charts, atlas, medal of honor; Group 31 and Class 113 for topographic models, bronze medal; Group 33 and Class 123 for transparencies or paintings on glass from enlarged photographs, gold medal; Group 34 and Class 126 for collective exhibit of instruments and methods for land surveying, medal of honor; Mines, Group 156 and Class 800 for per capita production of minerals, United States, silver medal; Mines, Group 156 and Class 760 for collection of minerals with maps, silver medal.

The list of awards for Alaska follows: Liberal Arts, Group 31 and Class 113 for models in relief of Alaska, bronze medal; Group 33 and Class 123 for seventy-one large colored photographs of scenes of people of Alaska, silver medal; Manufactures, Group 52 and 53 for exhibit of baskets and articles of horn, ivory and wood, silver medal; Agriculture, Groups 120, 121, 132 and 133 for barley, wheat and oats, medal of honor; potatoes, gold medal; grasses, silver medal; cabbage, silver medal; Mines, Group 153 for model of Central Alaska, gold medal; Group 153 for metallic and non-metallic minerals, bronze medal; Group 154 and Class 779 for Geological Survey—panorama and thawing model, silver medal; Alaska Roads Commission, Liberal Arts, Group 40 and Class 194 for methods of construction of roads and bridges, gold medal.

Iowa Employs 16,057 in Coal Mines

Coal production in Iowa during 1914 was practically the same as during the preceding year. The total output was 7,500,000 tons. The number of men employed in the mines of the State increased to 16,057 during 1914.

"Golden State Limited"
To California

In attending the Annual Meeting of the American Mining Congress, at San Francisco, September 20 to 22, 1915, avail yourself of the excellent service provided on America's foremost transcontinental train, the "Golden State Limited"—daily from Chicago, St. Louis, Kansas City and intermediate points via El Paso, Douglas, Bisbee, and Tucson.

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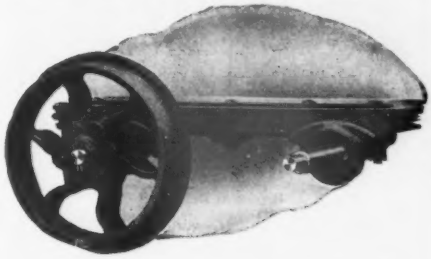
Phillips Patent Open Cap Wheel Truck



THE economies that this Truck will effect are real and tangible. The wheels will not wear out internally and are guaranteed in this respect; they seldom break, due to our process of annealing and the high quality of materials used; are thoroughly chilled, and when lubricated with fluid grease will run for six months to a year with one lubrication. This Truck is used at hundreds of Mines, two concerns each using over 10,000, while literally dozens of other companies have found it profitable to discard their old running gear in order to equip their cars with it exclusively. It will pay you to investigate this Truck.

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Manufacturers of

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CAN ANY MAN TRYING TO KEEP ABREAST WITH THE PROGRESS BEING MADE IN HIS INDUSTRY AFFORD TO MISS THE ASSEMBLAGE OF MINING MEN IN SAN FRANCISCO THE WEEK OF SEPTEMBER 20?

"PERHAPS THE GREATEST ADVANTAGES OBTAINED FROM A CONVENTION OF MEN IN THE SAME INDUSTRY ARE THE INFORMAL CONFERENCES THAT TAKE PLACE BETWEEN INDIVIDUALS."

YOU CAN'T

Look Into the Earth, but **WE CAN** get you a core of all strata to be examined

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Can Reduce Their Fuel Costs

By writing to the

IMPROVED COMBUSTION CO.
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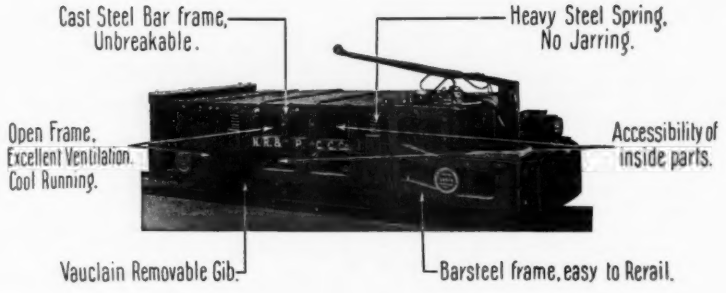
Barsteel Locomotive Advantages

Reliability plus Accessibility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Open Frame, Excellent Ventilation. Cool Running.
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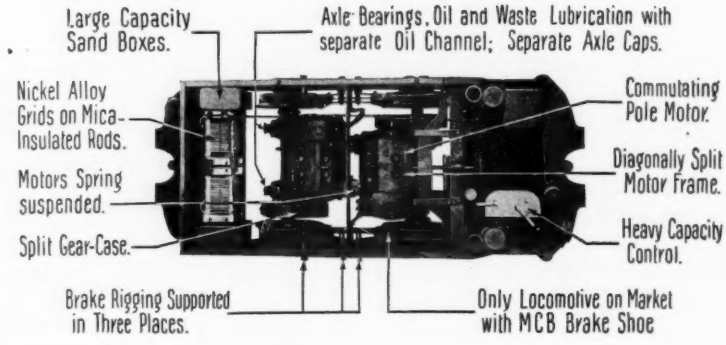
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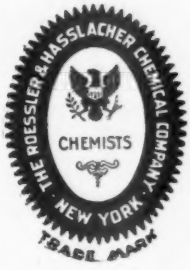

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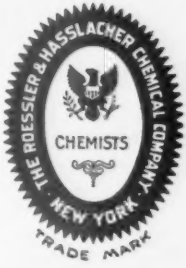

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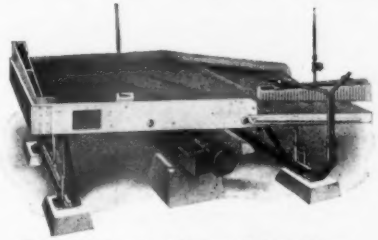

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THE mining industry of the United States as a whole needs cooperative effort. It needs a great national organization embodying all of its elements through which these cooperative tendencies may develop.

The American Mining Congress may be made into such an organization with your help. It has much good work to its credit, it is now doing good work, but its best work can only be done after your assistance has been secured. If you agree with this general proposition, a letter to the Secretary of the Congress will be welcome.

The question now is how can this work be carried on more effectively?

This depends upon you.

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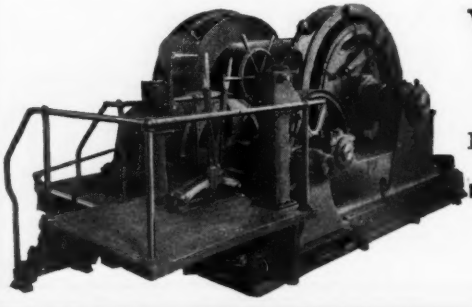
We would take advantage of the builder's offer to design the proper hoist for us; we would get the full benefit of his vast experience; we would let *him* guard against the mistakes, and *we* would get the best hoist to be had.

Have you ever tried buying hoists this way?



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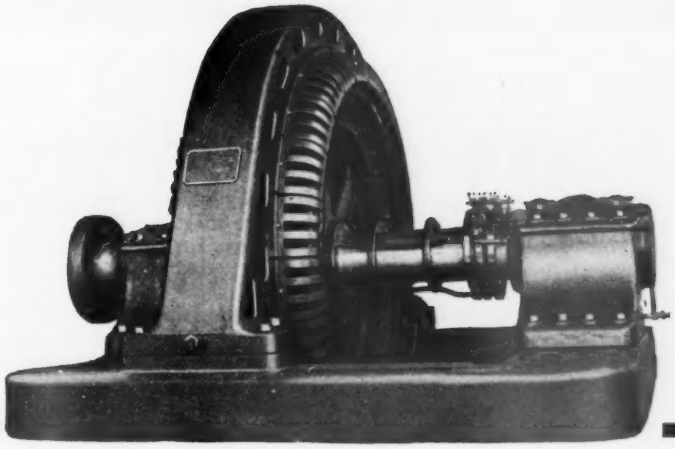

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An 1800 h. p. G-E alternating current hoist motor and control equipment has been ordered by the Tennessee Coal, Iron and Railroad Co. for the following duty:

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Angle between shaft and horizontal (average) approx.	40 per cent.
Weight of skip or cage	13440 lbs.
Weight of ore per trip	26880 lbs.
Size of rope	1⅜ lbs.
Diameter of drum	12 ft.
Average rope speed in feet per minute	2700 R.P.M.
Time for acceleration	15 sec.
Time for constant running (5280 ft. level)	106 sec.
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Number of tons (long) per hour (max.)	150
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Complete bulletins describing mine hoist equipment will be sent on request

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District Offices in:

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The American Mining Congress

The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

If you are interested in this work, now is the time to help; do not wait until those who are now carrying the burden have become discouraged.

The appended application blank will show the way. Come in and bring the neighbor who should join this movement. Mail application to

THE AMERICAN MINING CONGRESS

Munsey Building, Washington, D. C.

THE AMERICAN MINING CONGRESS

APPLICATION FOR MEMBERSHIP

.....191.....

I hereby make application for membership in THE AMERICAN MINING CONGRESS and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same.

Name.....

Occupation.....

P. O. Address.....

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You Save Money on Both Lubrication and Fuel

with this Semi-Diesel Oil Engine.
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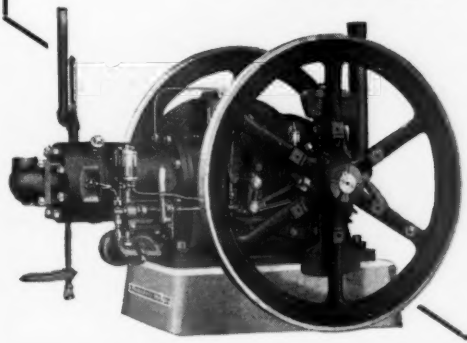

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The "Ironclad-Exide" Battery

Is particularly adapted for use on mine locomotives. It is rugged in construction, will stand hard service, give long life and can be operated at minimum expense. Any one competent to supervise the care of a locomotive is competent to supervise the care of an "Ironclad-Exide" Battery.

A mine superintendent using locomotives equipped with "Ironclad-Exide" batteries says, "These locomotives will pay for themselves in eighteen months and after that they will show a saving of about $15 per working day over the previous method of hauling."

You will be interested in our bulletin on the "Ironclad-Exide" Battery for mine use, a copy of which you can procure from any Sales Office of the Company.

THE ELECTRIC STORAGE BATTERY CO.

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Washington is the pulse center of the nation

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Nearly *two million dollars* are expended annually for the mining industry by the Federal Government. This is nothing like as much as should be spent. It is a considerable item, however, and is of peculiar interest to you.

The publication of much valuable information is frequently greatly delayed because the appropriation for printing is insufficient.

We are working for adequate appropriations, but pending success the Mining Congress will gladly serve its members by making special inquiry and report upon any phase of these investigations which can be made available in advance of publication. We are *at your service.*

The American Mining Congress

Munsey Building :: Washington, D. C.

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CARBIDE MINE LAMPS

Just One of 30 Different Styles

Equipped with Lever Feed—Self Lighter attachment — ¼-inch steel adjustable Candle stick—steel Hook—3-inch Reflector, built into lamp — 16.7 Candle-Power.

There is a Justrite lamp for every mining purpose—none better are made at any price. We can fill your requirements. Write for Booklet 216.

No. 108, $1.50 (Polished Brass)

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Complete Equipment for the Handling and Preparation of Coal at the Mine

We have designed and built the most successful plants in the country

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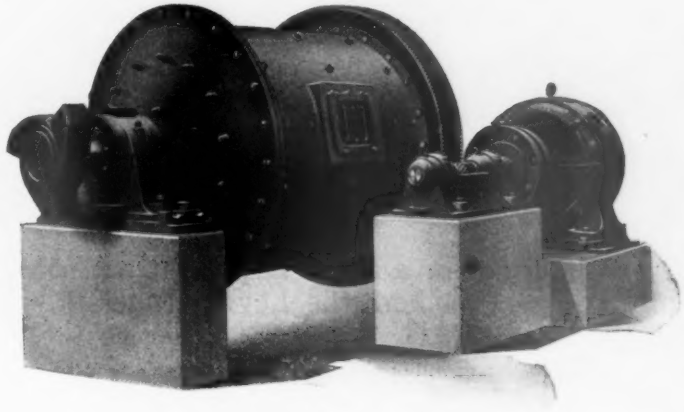

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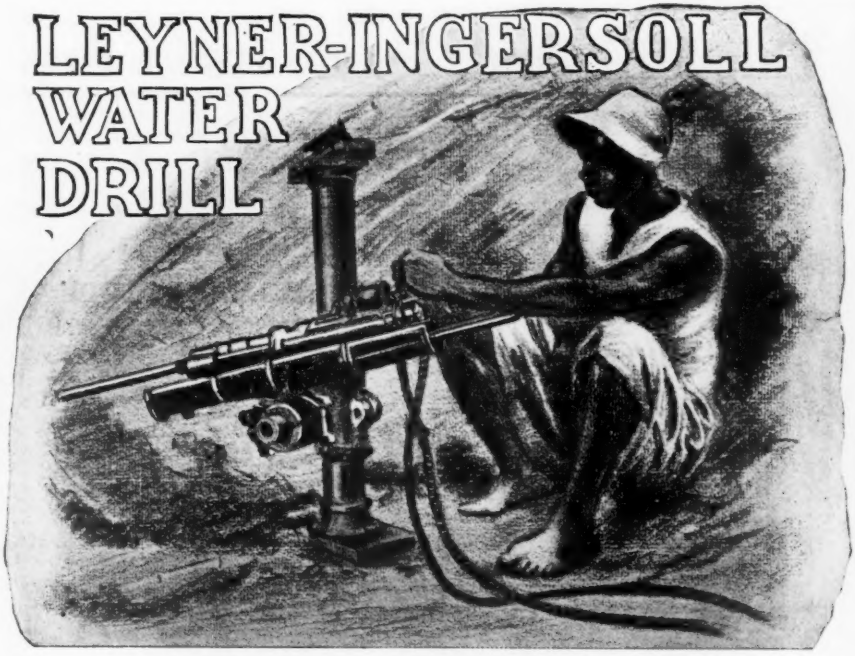

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DISTINCTIVE FEATURES

Hammer Drill Principle, giving rapid drilling. Simple Chuck, simplifying operation. Sergeant Rotation, eliminating stuck steel trouble. Butterfly Valve, non-freezing, rapid. Automatic Lubrication, preventing undue wear. IRCO Metal Cylinder, practically unbreakable in service.

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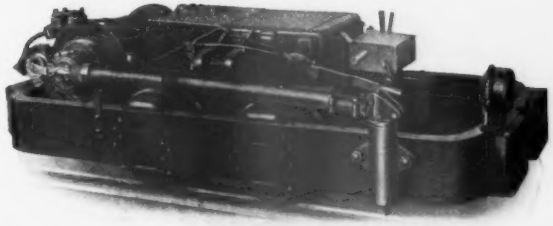
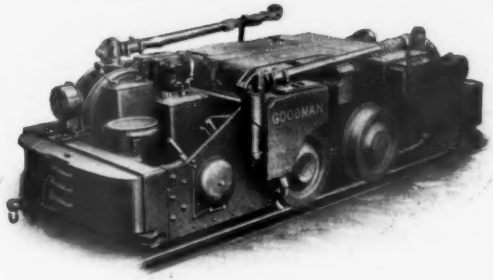
Low Types
OF
Gathering Locomotives



Type 1500—28 Inches High

LOCOMOTIVES FOR ALL GATHERING CONDITIONS



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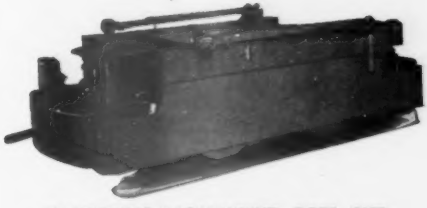
A. C. OR D. C. CURRENT

ELECTRIC COAL MINING MACHINES *and* MINING LOCOMOTIVES

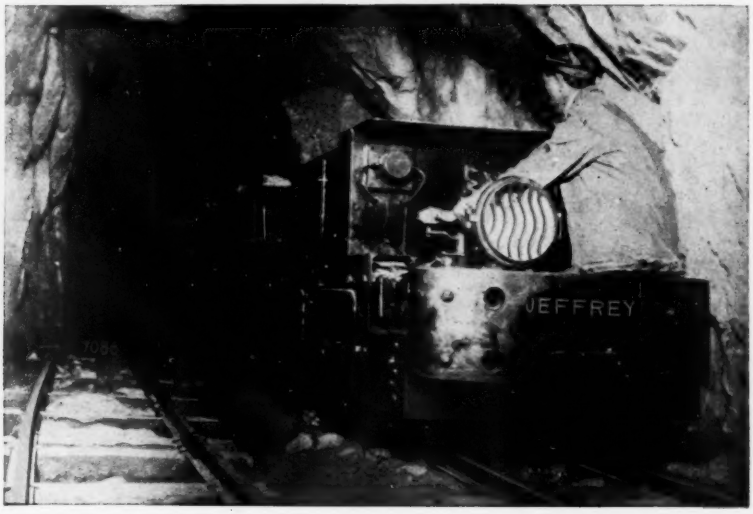
BREAST TYPE COAL MINING MACHINES



GATHERING LOCOMOTIVE—REEL END

MORGAN-GARDNER
"ELECTRIC CO."
68 E. ADAMS ST CHICAGO, U.S.A.

Jeffrey Storage Battery Locomotive Solves the Haulage Problem on Narrow Gauge Tracks for Metal Mine Service



The Portland Gold Mining Co., Victor, Colo., installed a 3-Ton Jeffrey Storage Battery Locomotive for handling ore on a 1,750 foot level. The saving effected in tramming costs has resulted in an order for two duplicate units.

The locomotive operates over 18-inch gauge track and has been in continuous daily service for nearly a year, working two shifts of 8 hours each. On each charge of battery it makes twenty-four round trips, handling train of 10 cars on each trip. It has a structural steel frame and is of the inside wheel type with single end control.

Special Bulletin No. 107-58 contains other interesting features of this installation, also tells how Jeffrey Storage Battery Locomotives are reducing haulage costs in other metal mines. Bulletin 117-58 is a treatise on our complete line of Mine Locomotives. Write for them.

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